For each major importing and exporting country, breakdowns of imports and exports will be presented in the accompanying *Discussion Paper*.

6.4 Market profiles

6.4.1 European Union

Since the negative results of 1993-1994, the EU15 balance of trade of SPWPs has been positive (graph 6.4.1). However in 1997, individually, only two products had a positive balance: coopers' products (barrels) and furniture, while wood mouldings, pallets and cases and joinery and carpentry were negative (graph 6.4.2). The EU's exports of SPWPs are in steady increase (graph 6.4.3).

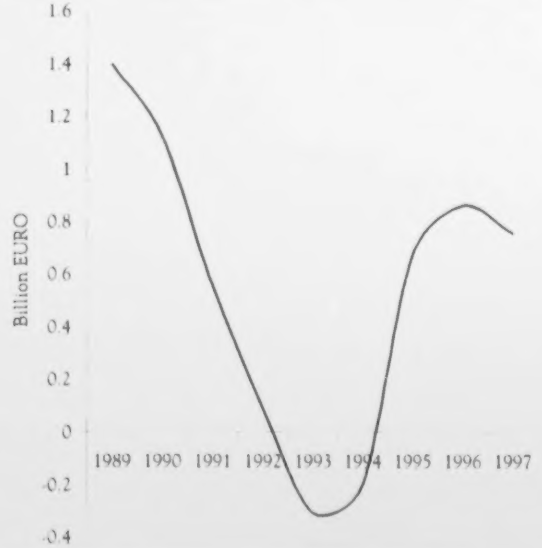
The contribution of the furniture and seating (mainly Italian) is out of proportion with the other headings and has the major weight on the positive side (table 6.4.1 and graph 6.4.4).

Germany is the larger European furniture producer and consumer but Italy exports twice as much.

Several industrial sectors had a sustained growth in the recent years. This is the case in flooring, a minor sector in terms of the quantity of wood used, but in steady increase in production and trade (graph 6.4.5). The expansion of the wood flooring is driven by fashion and its anti-allergic benefits. The market is promising and the small percentage of wood flooring in Europe (4.7% in 1997) is expected to grow fast.

GRAPH 6.4.1

EU15 balance of trade for selected SPWPs, including wooden furniture, 1989-1997



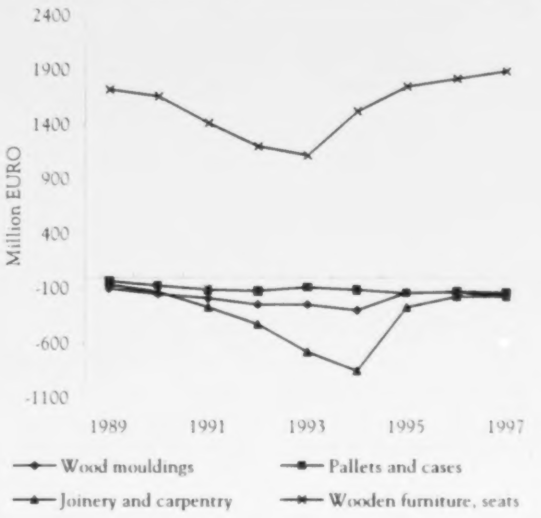
Source: COMEXT, 1999.

Multiple-layer (laminated) flooring has had a spectacular growth in recent years. Solid flooring is also growing at a lesser rate, while mosaic and laminated-parquet are nearly stagnant (graph 6.4.6).

Much of the supply of the flooring plants is traditionally bought in friezes (narrow, random-length strips).

GRAPH 6.4.2

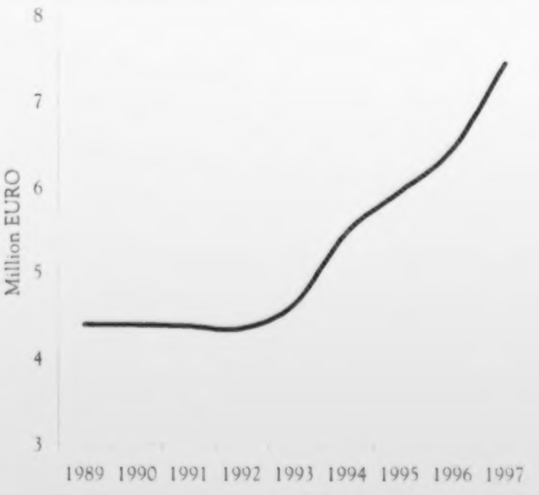
EU15 balance of trade, 1989-1999



Source: COMEXT 1999

GRAPH 6.4.3

EU15 exports of SPWPs, 1989-1997



Source: COMEXT, 1999.

Hardwood dimension[2] is now the supply of the most modern furniture plants, of which the high-productivity lines require prepared and homogeneous raw material.

The trade of continuously shaped wood is expanding in the EU (graph 6.4.7). In 1997, 40% of the total EU imports of profiled wood came from Indonesia and

TABLE 6.4.1

EU furniture market, 1998

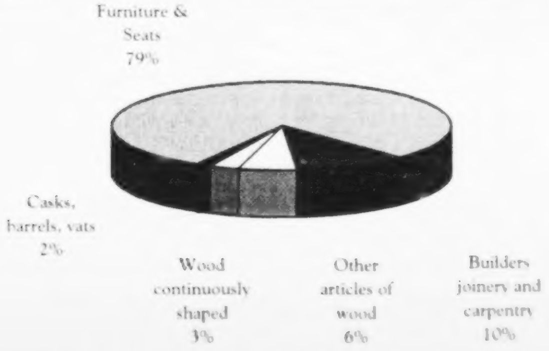
(Value in million euro)

	Production	*Consumption*	*Imports*	*Exports*
Austria	1,986	2,291	1,124	819
Belgium	1,887	2,470	1,727	1,144
Denmark	2,348	1,267	563	1,644
Finland	963	922	206	246
France	7,164	8,086	2,705	1,783
Germany	18,181	20,116	5,441	3,506
Greece	935	1,070	160	24
Ireland	310	402	192	100
Italy	15,189	8,529	606	7,266
Netherlands	2,194	2,907	1,224	510
Portugal	935	899	248	284
Spain	4,904	4,273	495	1,126
Sweden	1,634	1,212	643	1,065
United Kingdom	6,678	7,861	2,281	1,098
Total	65,308	62.305	17,615	20,615

Source: CSIL Milano (Furniture Industry Research Institute) as reported by the European Panel Federation, 1999.

GRAPH 6.4.4

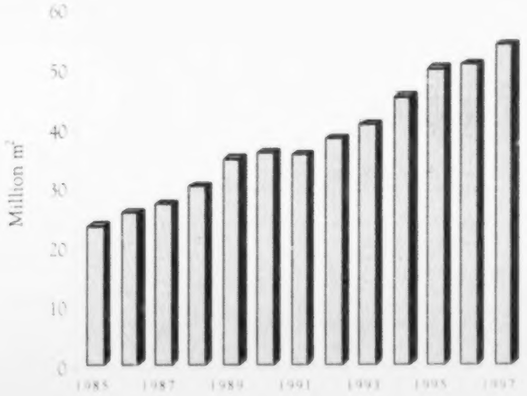
EU15 exports of SPWPs, 1997 breakdown by products



Source: COMEXT, 1999.

GRAPH 6.4.5

EU15 production of wood flooring, 1985-1997



Source: Fédération Européenne du Parquet,1999.

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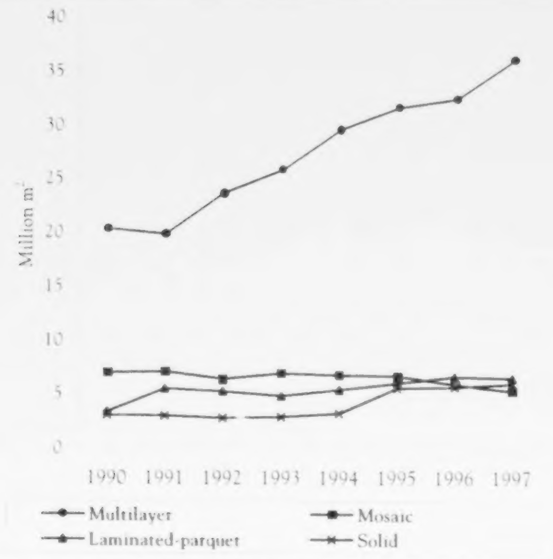
[2] Dimension is a semi-finished piece of wood of fixed width, thickness and length, with specified tolerances of moisture content.

Malaysia. Several eastern European countries (e.g. Czech Republic, Croatia, Estonia and Romania) are making considerable progress in exporting profiled wood to the EU. Italy is the major European exporter of profiled wood, mainly hardwood.

GRAPH 6.4.6

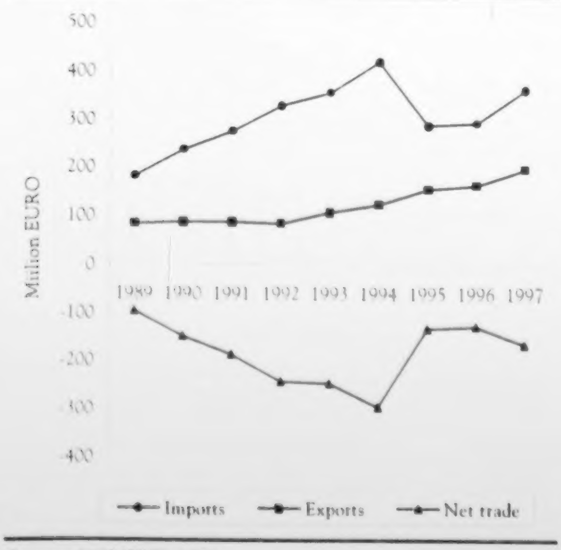
European wood flooring production by type, 1990-1999



Source: Fédération Européenne du Parquet, 1998.

GRAPH 6.4.7

EU15 trade of mouldings, 1989-1997

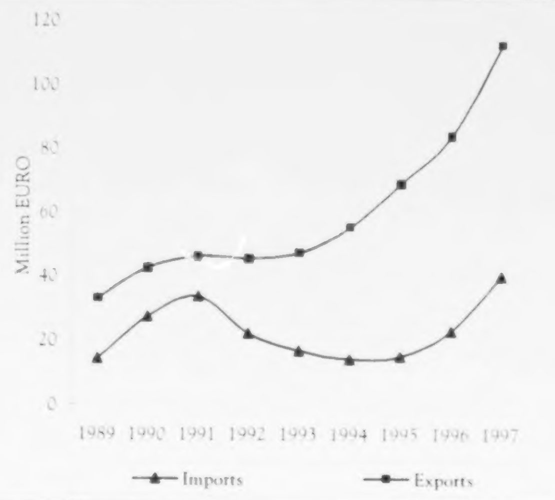


Source: COMEXT, 1999.

Another sector in continuous growth is the barrel industry (graph 6.4.8). France makes up 66% of the total ECE exports of coopers' products (barrels, casks and vats). In 1997, the French production represented more than 500,000 barrels, manufactured from 50,000 m³ of staves, obtained from 250,000 m³ of high quality logs (*Annuaire des Industries du Bois*, Union des Industries du Bois, 1999).

GRAPH 6.4.8

EU15 trade of barrels, 1989-1997



Source: COMEXT, 1999.

6.4.2 United States

As shown before, the United States is the largest importer of SPWPs, including furniture, and the second largest exporter behind Canada. The two groups with the highest trade value are continuously shaped wood (mouldings) and joinery and carpentry (graphs 6.4.9 and 6.4.10).

Since 1991, both imports and exports have been in constant growth, with a negative balance of trade for all SPWPs (graph 6.4.11). The United States is a net importer of furniture: $6.0 billion imported in 1998 versus $850 million exported.

Amongst the wood products, two items, joinery and carpentry and continuously shaped wood account for around 60% of imports and exports (table 6.4.2).

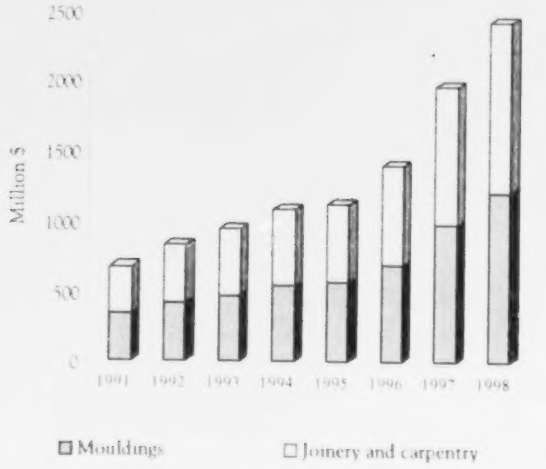
Canada is by far the main supplier of joinery and carpentry with 73% of the value of exports to the United States in 1998 (table 6.4.3). Other Central and South American countries account for 11%.

Canada is also the main supplier of profiled wood with 29% of the supply in 1998, followed by Chile (18%)

(table 6.4.4). Other Central and South American countries account for 25%.

GRAPH 6.4.9

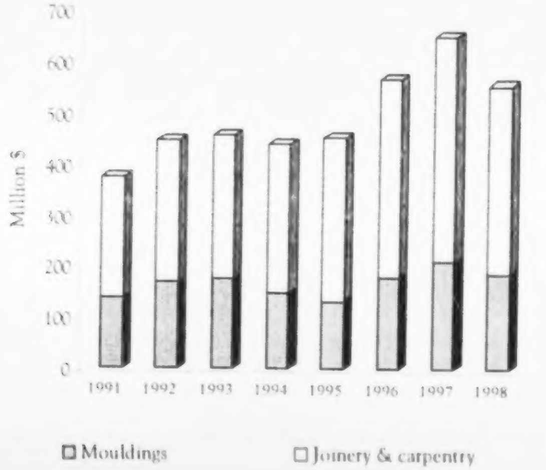
United States imports of SPWPs, 1991-1998



Source: Comtrade, 2000.

GRAPH 6.4.10

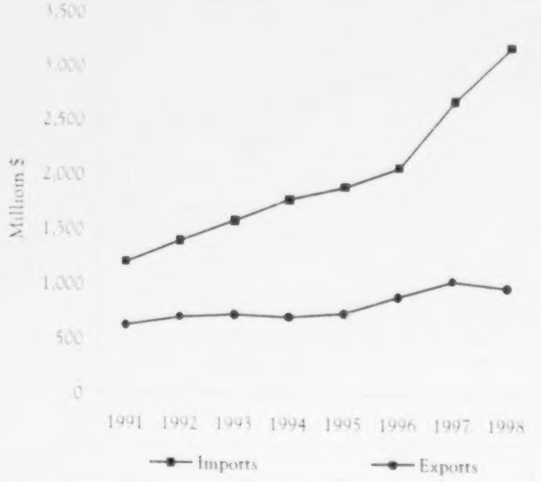
United States exports of SPWPs, 1991-1998



Source: Comtrade, 2000.

GRAPH 6.4.11

United States trade of SPWPs, excluding furniture 1991-1998



Source: Comtrade, 2000.

TABLE 6.4.2

United States, SPWP imports, excluding furniture,1998 ranked by value

(Million $)

Builders joinery & carpentry	1,212
Other articles of wood	743
Continuously shaped wood	695
Marquetry	199
Packing cases, pallets	113
Barrels, casks	104
Tableware	86
Tools and handles	41

Source: Comtrade, 2000.

TABLE 6.4.3

Main exporters of joinery and carpentry to the United States, 1998

(Million $)

Canada	891
Indonesia	50
Mexico	39
Brazil	35
Malaysia	31
Chile	26
Costa Rica	22
Sweden	15
China	12

Source: Comtrade, 2000.

TABLE 6.4.4

Main suppliers of profiled wood to the United States, 1998

(Million $)

Canada	203
Chile	124
Mexico	98
Indonesia	62
Brazil	59
Malaysia	34
New Zealand	30
Italy	16
China	13
Argentina	7

Source: Comtrade, 2000.

TABLE 6.4.5

United States, SPWP exports 1998

(Million $)

Builders joinery & carpentry	366
Continuously shaped wood	188
Other articles of wood	180
Marquetry	98
Barrels, casks	70
Packing cases, pallets	55
Tableware	18
Tools and handles	18

Source: Comtrade, 2000.

6.5 Conclusion

In the ECE region the trade in SPWPs is growing faster than trade in primary products. Many major forest products producers are seeking to maximize value-added processing and minimize exports of primary products. This trend is particularly evident in tropical countries. Trade, and especially production, of SPWPs will continue to be difficult to measure due to difficulties in identifying the portion of wood in final products. Nevertheless the increasing importance of secondary processing merits attention as a focus on only primary-processed products gives too narrow a view on wood products production, consumption and trade in the ECE region.

In addition, some manufacturers are integrating primary processing into their production of SPWPs in order to control raw material supply. Conversely primary product manufacturers, such as sawmills, are investing in value-added processing, for example in manufacturing hardwood dimension. This vertical integration of primary and secondary operations is an important structural change in the sector. One consequence is that statistics on primary processing, e.g. sawnwood produced, only give a partial picture of reality. This is again an impetus to follow more closely the production and trade of SPWPs.

A Geneva Timber and Forest Discussion Paper is envisaged in 2000 in which the author will expand on the topics addressed in this chapter.

Chapter 7

Wood Raw Material – Production, Trade and Consumption

Highlights

- Production of roundwood in the ECE region, at 1.2 billion m^3 annually, is far below the volume of annual growth.
- The demand for roundwood in western European countries is increasingly dominated by an ever smaller number of large wood processing companies, leading to weaker pricing power of the traditional small private and municipal forest owners and state forest services.
- The social demand for non-wood benefits is increasing in forests near urban areas, which leads to additional pressure on the forest owners and their incomes in these areas.
- Market forces have stimulated central and eastern European countries and the CIS to, at least temporarily, increase exports of roundwood. This is a major determinant for current developments in roundwood markets of the ECE region.
- Since 1996 exports to western Europe from the CIS and central and eastern European countries increased rapidly, by 36.2% and 9.5% respectively. These exports influence the traditional roundwood trade flows in other parts of ECE region and outside of it.
- If indications of about 20 to 30 million m^3 in illegal cuttings in the CIS countries are correct, they would mainly reduce the tax revenues, and not the sustainable level of removals.
- CIS roundwood production and consumption decreased through 1998, but turned around and increased in 1999 by 13.8% and 7.9% respectively.
- The dynamic development of roundwood exports in the CIS and central and eastern European countries should lead in the medium term to increasing income as a base for improving processing equipment, productivity and domestic purchasing power.
- Roundwood production and trade accelerated in Europe in 2000 following the extensive windthrow from the 1999 storms.

Introduction

As a background to the description of primary-processed products, this chapter describes the main developments in production and trade of roundwood. Production is used here as a synonym for removals, which are defined as forest roundwood volumes felled and removed from the forests. When reported, removals include personal needs of forest owners, which in some countries could reach significant volumes.

Distinction between the types of products (logs, pulpwood [1], wood fuel and other industrial roundwood) is rather difficult both in practice and statistically. The structure of roundwood products in the statistics is based on long-standing traditions. It starts from structuring roundwood in the direction of use. With the changes in wood processing technologies during the last decades this distinction is less and less valid. For example pulpwood with larger diameter can be used as small-diameter sawlogs. For these reasons it is often impossible to make direct links between particular roundwood products and their use in the wood processing industry.

In 2000 the situation in the European roundwood markets is heavily influenced by an oversupply of roundwood caused by the nearly 200 million m^3 windthrow of December 1999 (see special chapter 3). This chapter describes roundwood production, trade and consumption mainly through 1999, focussing on the development between 1998 and 1999, the latest period for which statistics are available.

In light of the differences in roundwood production and trade between various countries of the ECE region, several sub-regions were defined for this chapter: EU/EFTA, "other Europe" (otherwise known as central and eastern European countries), the CIS and North America. A listing of countries in the ECE region may be found in the annex.

The data quality differs between countries, products, and years. So far, only a few countries of the CIS region provide data to the timber database, including the largest producer, the Russian Federation. For most of the CIS countries the secretariat has estimated roundwood removals based on TBFRA[2] and FAO data. In future, the secretariat will attempt to collect more reliable data from the CIS and "Other Europe" countries, considering their dynamic development and possible influence to the European timber markets.

Even in those CIS countries which supplied data, the economic and social situation is such that the possibilities of errors (e.g. due to unrecorded production and trade) cannot be excluded. In order to compare regions over time the secretariat also made trend calculations for a few important countries, which did not provide complete, current wood raw materials data via the Joint Forest Sector Questionnaire (for example Canada). Possible inconsistencies between grand totals for roundwood and totals from sub-items are caused by the fact that some countries provide only grand totals without any desegregation by products. In some cases it was impossible to calculate an apparent consumption, because of missing data for one of the items: production, exports or imports.

7.1 ECE region developments

The ECE region is an important part of global forest resources. Nearly 43% of the global forest area is located in ECE countries. More than 1/3 of global removals is produced in this region (table 7.1.1). The share of global removals is decreasing for the whole region and for all of the analysed sub-regions, excluding the "Other Europe" countries, whose share of removals has shown a slight increase from 1995 to 1998.

TABLE 7.1.1

Ratio between ECE and global roundwood removals, 1995-1998

(% of global removals)

Sub-regions	*1995*	*1996*	*1997*	*1998*
EU/EFTA	8.43	7.85	8.05	8.14
Other Europe	3.07	3.15	3.25	3.31
CIS	4.21	3.87	3.90	3.36
North America	21.39	20.94	20.43	20.80
Total	37.10	35.81	35.62	35.61

Sources: ECE/FAO TIMBER and FAO databases, 2000.

Annually, nearly 1.2 billion m^3 of roundwood is harvested in ECE countries, which corresponds to 0.8 m^3 per hectare of forest area (TBFRA 2000). Depending on forest stand conditions and the accessibility of forests, the harvesting rate differs between regions. Possibilities for sustainable roundwood supply in the ECE region as a whole, and the sub-regions as well, estimated on the basis of net annual increment, are much higher than current harvests. The potential supply is not used so far, mainly for economic reasons. For example, in the case of Germany present production could be expanded by two-thirds while remaining in the framework of sustainable forest management. However, information exists about local and temporary over-cutting in some areas of the

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[1] In contrast to the last Review this chapter includes pulpwood.

[2] Temperate and Boreal Forest Resources Assessment.

ECE region, more specifically illegal cuttings within some CIS countries.

Changes in the eastern Europe policy framework and the merging process of wood processing enterprises are the major determinants for current changes in roundwood markets of the ECE region.

7.1.1 Roundwood production

The central and eastern ("Other") European countries are moving relatively fast towards market economies and roundwood production is characterised by dynamic growth (graph 7.1.1 and table 7.1.2). The production of roundwood in the "Other Europe" region grew by 4.1 million m^3 per year between 1995 and 1999, accelerating by 7.1% from 1998 to 1999 (table 7.1.4). In this region removals amounted to 115.7 million m^3 in 1999.

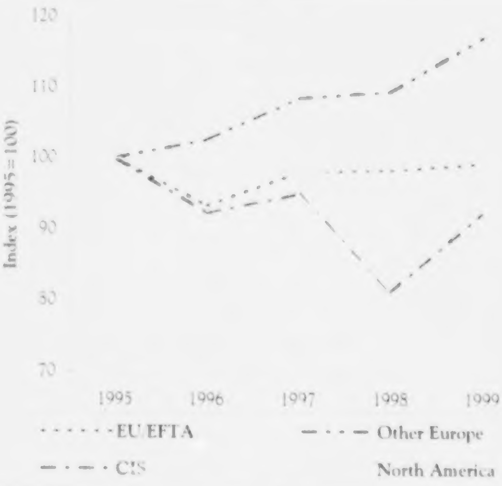
In comparison to the more or less stable increasing development in "Other Europe", roundwood production in the CIS is still unsteady. The main reason is the fluctuation of domestic demand. Despite strong growth of 13.8% in 1999, production reached about 125 million m^3, only 92% of the 1995 level and only 33% of the 1990 removals.

In contrast to the CIS, development in North America and the EU/EFTA appears stable. These two regions are still the leading producers of roundwood in the ECE region, with about 690 and 270 million m^3 removals respectively.

Most of the harvested roundwood volume is used or traded locally, because of the high transportation costs in comparison to processed timber. Only about 7% of ECE

GRAPH 7.1.1

Development of roundwood production in the ECE area by regions, 1995-1999



Source: ECE/FAO TIMBER database, 2000.

TABLE 7.1.2

Production (removals) of roundwood by selected countries in the ECE Region, 1995-1999

(1,000 m^3)

Region	Country	1995	1996	1997	1998	1999	Average growth rate	% Change 1998 to 1999
EU/EFTA	Sweden	63,600	56,300	60,200	60,600	58,700	-550	-3.1
	Finland	49,894	46,272	51,798	53,660	53,851	1,530	0.4
	Germany	39,343	37,014	38,207	39,052	37,634	-138	-3.6
	France	36,061	33,143	34,932	35,527	36,380	302	2.4
Total		**270,833**	**252,529**	**265,388**	**266,186**	**268,921**	**983**	**1.0**
Other Europe	Poland	19,088	20,316	21,635	23,107	24,300	1,322	5.2
	Turkey	19,279	19,411	18,050	17,668	17,617	-507	-0.3
	Czech Republic	12,365	12,600	13,491	13,991	14,203	507	1.5
	Romania	12,178	12,250	13,529	11,649	12,677	40	8.8
Total		**98,726**	**101,249**	**107,073**	**108,053**	**115,684**	**4,072**	**7.1**
CIS	Russian Federation	116,510	101,750	113,798	95,000	111,000	-1,777	16.8
	Belarus	10,455	15,707	7,585	7,765	7,375	-1,410	-5.0
	Ukraine	6,318	6,252	6,053	6,053	5,920	-100	-2.2
Total		**135,295**	**124,710**	**128,465**	**109,816**	**124,971**	**-3,554**	**13.8**
North America	United States	499,310	490,601	485,880	494,016	500,745	628	1.4
	Canada	188,346	183,546	187,753	185,955	185,659	-297	-0.2
Total		**687,656**	**674,147**	**673,633**	**679,971**	**686,404**	**332**	**0.9**
Grand Total		**1,192,510**	**1,152,635**	**1,174,559**	**1,164,026**	**1,195,980**	**867**	**2.7**

Source: ECE/FAO TIMBER database, 2000.

roundwood production is traded. About 65% of the industrial roundwood exports and 68% of the imports in ECE region is traded inside the region. There are significant year to year changes in roundwood trade, which the secretariat tried to analyse in the framework of this report, using FAO direction of trade data for industrial roundwood production (tables 7.1.3and 7.1.4).

Unfortunately some data from the FAO database cannot be analysed in enough detail, for example exports from "Other developed" countries to the EU/EFTA region, which amounts to 61% of the exports from these countries. Table 7.1.3 shows the structure of exports by destination, table 7.1.4 gives the structure of imports by delivering countries.

7.1.2 Roundwood trade

Based on FAO statistics, the ECE region has 55% of the world industrial roundwood trade. Roundwood imports in the ECE region as a whole increased by 10.7% bettween 1998 and 1999 (table 7.1.5). This increase is lower than the increase in the rate of exports, which amounts positive to 15.1%. With only 8.3 million m^3 net trade the region is still a net exporter of roundwood. The picture between sub-regions is quite different.

The largest exporter of the ECE region is the CIS region, with more than 30.2 million m^3 roundwood in 1999. With a 36.2% difference between 1998 and 1999, the CIS region has the highest growth rate for roundwood exports. More than half of industrial roundwood exports from the CIS goes to EU/EFTA countries based on a high market potential in between these two regions. A startling 92% of industrial

TABLE 7.1.3

Industrial roundwood trade flows, exports by destination, average 1995-1998

(%)

	Exporting region						
Importing Region	*EU/ EFTA*	*Other Europe*	*CIS*	*North America*	*Non-ECE*	*Other developed*	*Other developing*
EU/EFTA	**92**	92	56	2	10	61	25
Other Europe	1	**1**	3	0	0	4	3
CIS	0		**0**			1	
North America	0		0	**28**	1	21	4
Non-ECE	3	0	39	69	**83**	6	59
Other developed	1	6	1	0	2	**5**	2
Other developing	2	1	0	1	4	2	**8**
Total, %	100	100	100	100	100	100	100

Source: FAO database, 2000.

TABLE 7.1.4

Industrial roundwood trade flows, imports by countries of origin, average 1995-1998

(%)

	Exporting region							
Importing Region	*EU/ EFTA*	*Other Europe*	*CIS*	*North America*	*Non-ECE*	*Other developed*	*Other developing*	*Total %*
EU/EFTA	**23**	20	28	1	4	18	7	100
Other Europe	8	**7**	37	1	5	25	18	100
CIS	12		**0**			88		100
North America	0		0	**55**	2	37	7	100
Non-ECE	1	0	21	23	**36**	2	18	100
Other developed	8	24	13	1	18	**26**	9	100
Other developing	9	6	2	6	27	12	**38**	100

Source: FAO database, 2000. **intra trade** roundwood exports from "Other Europe" go to the EU/EFTA region. Roundwood exports from "Other Europe" increased rapidly by 9.5% between 1998 and 1999. The main reasons are lower prices, especially for low quality products, and the comparatively short transport distances from eastern suppliers to western markets. In fact wood quality is quite high but the ability to meet other specifications, such as length, diameter, product assortment or delivery deadlines, is low.

In relation to this, the EU/EFTA region is the biggest importer. Imports here increased since 1996 and grew further, by 8.9 %, between 1998 and 1999. The imports are coming mainly from the CIS (28%) and the "Other Europe" region (20%) as well as from other developed countries. The EU/EFTA region receives about 23% of industrial roundwood from countries inside this region and exports 92% to the countries of the same region; in other words there is considerable intra regional trade.

TABLE 7.1.5

Roundwood exports and imports by selected countries in the ECE Region, 1997-1999

(1,000 m^3)

Region	*Country*	*1997*	*1998*	*1997*	*1998*	*1999*	*Average growth rate*	*% Change 1998 to 1999*
EXPORTS								
EU/EFTA	Germany	4,919	2,992	4,032	4,871	3,987	1	-18.1
	France	2,475	2,227	2,282	2,857	2,894	147	1.3
	Sweden	1,725	1,621	1,393	1,420	1,333	-98	-6.1
	Switzerland	1,016	979	1,147	1,006	1,218	43	21.1
Total		15,098	11,635	13,629	15,146	15,072	346	-0.5
Other Europe	Estonia	2,637	1,898	2,915	3,792	3,759	414	-0.9
	Czech Republic	2,161	2,687	2,657	2,497	2,626	74	5.2
	Latvia	2,429	1,467	2,124	2,760	2,953	234	7.0
	Lithuania	1,769	952	765	792	938	-182	18.4
Total		11,260	8,903	11,068	13,194	14,537	1,085	10.2
CIS	Russian Federation	18,374	15,915	17,845	19,972	27,350	2,201	36.9
	Belarus	175	670	711	812	1,323	244	62.9
	Ukraine	1	307	465	465	778	171	67.3
Total		18,550	16,892	19,021	21,250	29,451	2,616	38.6
North America	United States	12,817	11,937	10,864	12,290	12,433	-42	1.2
	Canada	1,187	955	701	2,029	2,917	453	43.8
Total		14,004	12,892	11,565	14,319	15,350	412	7.2
Grand Total		58,912	50,322	55,283	63,909	74,411	4,459	16.4
IMPORTS								
EU/EFTA	Finland	9,389	6,613	6,775	9,347	10,301	456	10.2
	Sweden	7,667	5,066	7,745	9,301	10,482	987	12.7
	Austria	4,618	4,747	5,433	5,237	7,154	556	36.6
	Italy	5,058	5,156	4,742	5,456	5,197	58	-4.7
Total		43,904	34,700	40,183	46,892	51,054	2,649	8.9
Other Europe	Turkey	782	1,249	1,049	1,346	1,510	155	12.2
	Czech Republic	335	218	505	784	817	153	4.2
	Poland	485	349	268	372	560	17	50.6
	Slovenia	324	258	333	294	490	37	66.6
Total		2,701	2,870	3,526	4,208	4,943	582	17.5
CIS	Russian Federation	975	481	335	228	152	-190	-33.3
	Ukraine	471	315	160	160	57	-98	-64.6
	Republic of Moldova	31	31	31	31	31	0	0.0
Total		1,476	827	526	419	239	-288	-42.9
North America	Canada	6,563	6,156	6,753	7,012	6,990	171	-0.3
	United States	977	752	810	4,973	7,054	1,638	41.8
Total		7,540	6,908	7,563	11,985	14,044	1,808	17.2
Grand Total		55,621	45,305	51,798	63,504	70,280	4,752	10.7

Source: ECE/FAO TIMBER database, 2000.

In North America the situation is characterised by slightly increasing roundwood exports and rapidly growing imports with a growth rate of 17.2% between 1998 and 1999. At 15.4 million m^3, exports are now only slightly higher than imports. Roundwood exports are mainly (69%) going to outside of the ECE region or staying in the region as intra-trade (28%). 55% of North American industrial roundwood imports are coming from inside the region and 37% from other developed countries outside the ECE region.

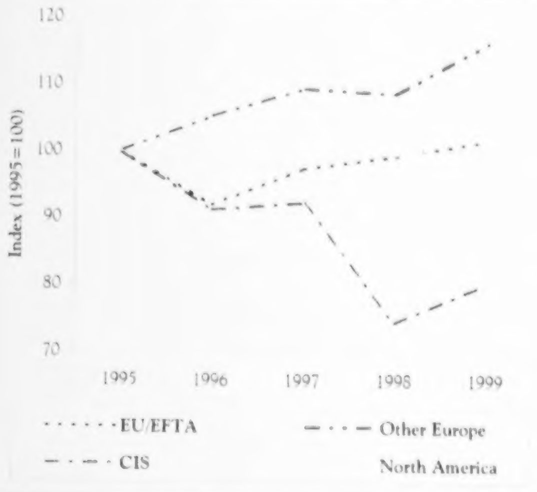
7.1.3 Apparent Consumption

Following trends of roundwood production and trade of ECE region, the development of apparent consumption increased by 2.5% between 1998 and 1999 and reached a volume of 1.2 billion m^3.

There is stable development for the EU/EFTA and North America (graph 7.1.2). In contrast, consumption in the CIS region fell from 1995 to 1998 to 74% of the 1995 level and increased rapidly in 1999 up to a level of 80% of 1995 roundwood consumption. The reason is mainly the continued weak domestic demand. Obviously, little income from roundwood exports is brought back into the development of domestic production capacities.

GRAPH 7.1.2

Development of apparent roundwood consumption in the ECE area by regions, 1995-1999



Source: ECE/FAO TIMBER database, 2000.

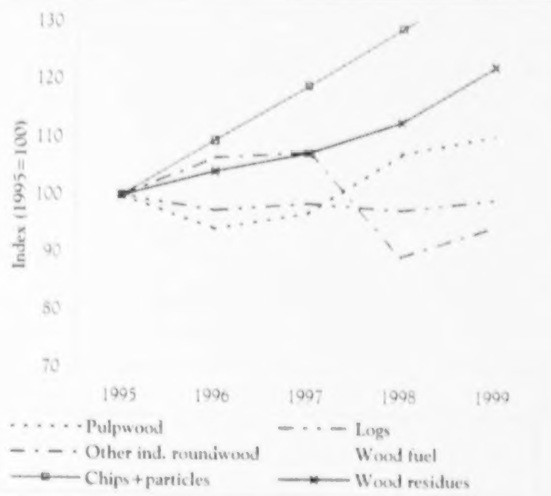
The picture is more optimistic in the "Other Europe" region, where increasing production, exports and imports led also to increasing consumption. Between 1998 and 1999, roundwood consumption increased by 7.1%, which is slightly less than the growth rate in the CIS, where the consumption growth rate amounted to 7.9%.

The structure of roundwood products in ECE region is changing. Production of pulpwood (round and split) is increasing rapidly, with an average growth rate of about 11.2 million m^3 per year from 1995-1999 (graph 7.1.3). Between 1998 and 1999 the growth of pulpwood production was about 3.0%. At the same time, wood fuel, other industrial roundwood and also log production is slightly decreasing. The "production" of wood residues has grown faster than that of any other type of wood raw material since 1995.

The picture varies between the ECE sub-regions, which will be described in the following sections.

GRAPH 7.1.3

Development of roundwood production in the ECE area by product groups, 1995-1999



Source: ECE/FAO TIMBER database, 2000.

7.2 Developments in EU/EFTA

Nearly 270 million m^3 of roundwood was produced in EU/EFTA countries in 1999, a moderate growth in roundwood production and consumption in comparison to the development in "Other Europe" and the CIS. During 1995 and 1996 production decreased by 18.3 million m^3. Between 1998 and 1999 it increased negligibly, only by 1%, whereas the production of logs decreased by 1.4% or by 2.0 million m^3.

In 1999, removals in Sweden and Germany decreased, while the supply in Finland and France maintained a positive trend. Sweden and Finland were still the biggest producers, with 58.7 and 53.9 million m^3 of roundwood removals respectively.

EU/EFTA region, with 51 million m^3, is the biggest importer and at the same time with 36 million m^3 the only net importer of ECE region. While imports grew between 1998 and 1999 by 8.9%, exports decreased by 1.2% and amounted to 16 million m^3 roundwood in 1999. The EU/EFTA region has consolidated its position as an importing roundwood region. The most important importers of industrial roundwood are Finland and Sweden, importing in 1999 about 10.3 and 10.5 million m^3 respectively. Most of these volumes were imported from Russia and the Baltic region. In Austria roundwood imports increased by 36.6% between 1998 and 1999 and reached 7.1 million m^3. Imports here are mainly coming from the Czech Republic and Germany.

The exports are mainly intra-trade (92%), excluding roughly 0.6 million m^3 industrial roundwood, which in 1998 went from Germany to Czech Republic.

Expanding exports from "Other Europe" and the CIS countries, mainly going to western Europe, are changing traditional trade flows. For example, Germany decreased the total roundwood net exports from 2.7 million m^3 in 1995 to 0.59 million m^3 in 1999, while at the same time nearly quadrupled net imports from the CIS (table 7.2.1).

TABLE 7.2.1

German roundwood net trade, 1995-1999

(1,000 m^3)

	1995	1996	1997	1998	1999
EU/EFTA	2925.7	1700.6	2130.6	2073.7	1319.5
Other Europe	-282.4	-336.3	-245.1	-101.3	-213.8
CIS	-13.5	-39.1	-63.3	-135.8	-523.2
Non-ECE	39.2	43.5	40.7	13.7	11.8
Total	2669.0	1368.8	1862.9	1850.3	594.3

Source: ZMP, 2000.

The EU/EFTA region imports also about 12.9 million m^3 wood residues, chips and particles and exports 11.3 million m^3, which means that in these products, and unlike other ECE regions, the EU/EFTA region is also a net importer (table 7.2.2). Germany increased exports through 1998, while at the same time Belgium & Luxembourg increased their imports, possibly from Germany.

In view of the above noted trends of slightly decreasing production and increasing imports, consumption increased by 2.4% and reached 304 million m^3 in 1999. After a drop of more than 20 million m^3 in 1996 consumption in EU/EFTA region is now nearly on the same level as in 1995.

7.3 Developments in "Other Europe"

Roundwood production in "Other Europe" countries increased quickly during the last five years with an average growth rate of about 4 million m^3 roundwood per year. Between 1998 and 1999 removals increased by 7.6 million m^3, which corresponds to a growth rate of 7.1%. The major source of this current growth is coming from Latvia, Estonia as well as Romania. Since 1996 Poland is the largest supplier in this region with about 24.3 million m^3 in 1999, behind Turkey and the Czech Republic.

Log production in "Other Europe" region is increasing rapidly, especially in Latvia, where the growth between 1998 and 1999 amounted to 2.3 million m^3 logs.

With 12.5 million m^3 of roundwood in 1999, this region is the second net exporter after the CIS. The development of harvesting is the reason for the rapid increase in exports of 9.5% between 1998 and 1999, leading to a volume of 16.8 million m^3 in 1999. In 1998 significant volumes of industrial roundwood went from Estonia (2.9 million m^3) and Latvia (2.5 million m^3) to Finland and Sweden and from the Czech Republic to Austria (1.7 million m^3).

Imports by countries of the "Other Europe" region also increased rapidly by 17.5%, but the volume, in comparison to the EU/EFTA region, was still minor. Large volumes of industrial roundwood were coming from Russia to Turkey (0.6 million m^3 in 1998).

Exports of wood residues, chips and particles also increased rapidly by 12.3 % between 1998 and 1999, reaching 2.3 million m^3. After North America, the "Other Europe" region is now becoming the second most important net exporter of these products, with about 2.0 million m^3. Exports increased mainly in Estonia (by 200,000 m^3 per year during 1995 and 1999).

Taking the above into consideration, since 1998 the "Other Europe" region became the third most important roundwood consumer in ECE region, overtaking the CIS. The consumption growth rate between 1998 and 1999 corresponds to 7.1%.

7.4 Developments in the CIS

In comparison to the "Other Europe" region, most of the CIS countries are only in the beginning of a stabilisation of their policy framework, so the development of roundwood markets is characterised by high volatility. The data for the CIS region is dominated by those for the Russian Federation, by far the biggest producer and consumer in the region.

Roundwood production in the region as a whole was decreasing through 1998 but then turned around and increased in 1999 by 13.8%, and in Russia by 16.8%, reaching 125 million m^3 in the CIS. Nearly half of this volume increase was logs, with production in 1999 of 4.5 million m^3. Pulpwood production is increasing extremely fast (27% between 1998 and 1999), last year reaching 39.4 million m^3.

TABLE 7.2.2

Exports and imports of wood residues, chips and particles, 1995-1999

(1,000 m^3)

Region	*Country*	*1995*	*1996*	*1997*	*1998*	*1999*	*Average growth rate*	*% Change 1998 to 1999*
EXPORTS								
EU/EFTA	Germany	1,878	2,987	3,522	7,677	6,250	1,343.4	-18.6
	France	1,160	1,211	1,156	1,318	1,491	76.9	13.2
	Austria	2,120	1,707	557	699	842	-356.5	20.5
	Belgium & Luxembourg	635	465	407	407	872	41.7	114.4
Total		7,127	8,072	7,429	12,013	11,344	1,237.4	-5.6
Other Europe	Estonia	178	748	747	888	1,026	183.7	15.6
	Czech Republic	492	552	479	339	497	-20.3	46.6
	Latvia	135	198	235	334	514	89.4	53.9
	Slovakia	10	157	185	181	151	30.6	-16.4
Total		1,054	1,865	1,824	1,907	2,346	262.7	23.0
CIS	Russian Federation	533	644	701	529	600	1.9	13.4
North America	United States	5,552	7,237	6,212	6,064	6,296	31.5	3.8
	Canada	1,488	1,717	1,707	1,498	1,391	-41.3	-7.1
Total		7,040	8,954	7,919	7,562	7,687	-9.8	1.7
IMPORTS								
EU/EFTA	Belgium & Luxembourg	1,196	1,117	1,866	1,866	2,169	269.5	16.3
	Austria	2,470	2,583	839	734	921	-494.9	25.5
	Italy	1,235	1,155	1,499	1,703	1,757	159.2	3.2
	France	1,552	1,114	1,278	1,294	1,015	-89.3	-21.6
	Germany	453	720	873	2,041	1,913	424.1	-6.3
Total		10,051	10,493	10,950	12,679	12,884	785.0	1.6
Other Europe	Estonia	2	70	108	524	522	149.3	-0.4
	Hungary	121	199	450	34	49	-31.0	44.7
	Slovenia	58	49	69	84	119	15.8	42.1
	Czech Republic	8	23	54	65	73	17.2	12.3
Total		217	398	708	736	835	157.2	13.4
CIS	Ukraine	1	1	3	3	4	0.6	45.3
North America	Canada	1,344	933	1,611	1,816	2,223	264.2	22.4
	United States	1,227	1,583	1,464	707	518	-229.4	-26.7
Total		2,571	2,516	3,075	2,523	2,741	34.8	8.6

Source: ECE/FAO Timber database, 2000.

The current data may be underestimated because of unrecorded removals (e.g. from illegal fellings). The volumes for such cuttings is estimated by various publications in the range of 2 to 20 million m^3 roundwood, which would correspond to roughly 1- 15% of the reported removals. In spite of increases in roundwood production in Russia, the potential levels are not fully realised. According to the Ministry of Economics, the country could cut up to 500 million m^3 a year, without any adverse effect on forest yield or the environment (World Wide Wood, 2000).

The CIS roundwood exports are increasing rapidly, reaching 30.3 million m^3 in 1999. Between 1998 and 1999 exports grew extremely fast, by 36% or by roughly 8 million m^3. In addition to Russia, Belarus and Ukraine were responsible for this increase, where the growth rate amounts to 62%. Also the export of wood residues, chips and particles grew at a high rate of 13.4% between 1998 and 1999.

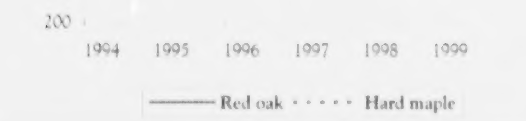
In 1998 more than the half of the exports of industrial roundwood from the Russian Federation were going to EU/EFTA region: about 7.6 million m^3 to Finland and 2.0 million m^3 to Sweden. 6.7 million m^3 of industrial roundwood were exported outside the ECE region, mainly to Japan and China. China's share of Russian roundwood exports rose yet again in the third quarter of 1999, rising by a massive 230%. The areas closest to export markets, e.g. north-western parts of Russia, have more opportunities to maintain export markets.

In some countries, such as Belarus for example, wood exports are necessary to pay for grain imports (World Wide Wood, 2000). Roundwood imports decreased at the same time and are now only a minor 0.2 million m^3.

Consumption of roundwood was decreasing sharply during the last five years by 6.6 million m^3 per year, especially in 1998, caused mainly by the mid-1998 economic crises. Only in 1999 consumption did grow by 7 million m^3 or 7.9 %. The same picture is ascertainable in nearly all countries of this region. One of the main needs is to return revenues from exports of resources both to the general public budget and to the renovation of obsolete technical equipment in the forest sector.

GRAPH 7.4.1

United States hardwood log prices, 1994-1999



Note: Prices paid for red oak and hard maple, grade 1 logs, delivered to sawmills, Doyle log scale.

Source: Ohio Timber Prices, Ohio Division of Forestry, 2000.

7.5 Developments in North America

As in the EU/EFTA region, the wood raw material markets in North America are relatively stable. In 1999 in this region 680 million m^3 roundwood were produced, of which nearly 400 million m^3 were logs and 200 million m^3 were pulpwood. Roughly 500 million m^3 of total removals are supplied by the United States.

As reported last year in the *Review*, the forest management in US National Forests in the Pacific Northwest is changing to support non-wood benefits, which leads to a decrease of roundwood supply from these forests. During the first half of 2000 the Forest Service timber sales totalled 2.1 million m^3, down by 11.6% from 2.4 million m^3 during the same period a year earlier and in comparison with 1995. In total, from all forestlands, harvests are still on the same level as in 1995. However roundwood demand has shifted to private forests for supply, mainly in the south-eastern region of the country. This could be a reason for the current increase in US sawlog prices (graph 7.4.1).

The statistics show that pulpwood production in United States was increasing, especially through 1998 by an average annual growth rate of 5.9 million m^3, whereas the production of fuel wood there decreased by 4.9 million m^3 a year.

Logs exports to Japan decreased significantly from 7.3 million m^3 in 1995 to 4.8 million m^3 in 1999 (Japan Wood-Products Information and Research Center, 2000). Despite this fact, roundwood exports are still increasing slightly, by 7% for the region as a whole. Because of rapidly increasing imports of roundwood in the United States, mainly coming from Canada, but also from outside the ECE region, the position of North America as a roundwood net exporter is decreasing. In 1999 net trade amounted to only 1.4 million m^3 roundwood exports. Despite this fact, roundwood exports are still significant with about 15.4 million m^3 in 1999. The main destination of these exports is Japan with 4.4 million m^3 industrial roundwood in 1998 and Canada with 3.5 million m^3.

Therefore, apparent consumption increased slightly, by 1.8 million m^3, during 1995 to 1999 and by 1.1% between 1998 and 1999. In light of the use of trend estimations for roundwood production of Canada, consumption developments are not reliable enough to discuss them in more detail here.

More than the half of North American industrial roundwood imports and 28% of the exports are intra-trade between the US and Canada.

The United States is a net exporter of wood residues, chips and particles, with about 5.8 million m^3 in 1999. The imports of wood residues, chips and particles decreased in the United States, while the exports of these products are still on a high level of more than 6 million m^3.

Chapter 8

Sawn Softwood – Consumption, Supply and Trade

Highlights

- Consumption, production and trade of sawn softwood rose to record levels in North America and Europe in 1999 and were even stronger in early 2000.
- Consumption of sawn softwood in the ECE region grew 4% in 1999, with growth of 6% in North America, 3% in Europe and a decrease of 18% in Russia.
- Strong economies in North America and Europe are driving demand for sawnwood for construction and other uses.
- Prices moved in opposite directions in 2000, falling to near-term lows in North America and firming in Europe.
- The United States increased imports by over 1 million m^3, with much of the new increase coming from Europe, as well as new sources from South America and Russia.
- Germany became the largest sawnwood producer in Europe and continues to be the greatest consumer by far.
- Central and eastern European countries are rapidly increasing domestic consumption, albeit from low levels, and are succeeding in finding new export markets in western Europe, United States and Asia.
- Russian Federation exports increased dramatically in 1999, although production fell.
- The ongoing recovery from the 1998 Asian economic crisis allowed ECE region exporters' markets in Japan to rebound.

8.1 Introduction

At the end of the millennium in 1999, sawn softwood demand benefited from strong economic conditions and related high levels of construction and other uses of sawnwood in North America and Europe. In contrast, the 1998 economic crisis in the CIS was still reflected in the 1999 statistics. The important, common export market for the ECE region exporters, Japan, partly recovered from the 1997/1998 Asian economic crisis and replenished stocks of sawnwood, although not to pre-crisis levels.

And at the beginning of the new millennium in 2000, record levels of sawn softwood production and trade were occurring in North America and Europe

This chapter will look at the sawn softwood markets, first on a region-wide basis, and then broken down by North America, Europe and the CIS. Each section is based on the ECE/FAO TIMBER database and then is completed with additional information obtained from official sources and trade journals.

The statistics for 1998 and 1999 for some countries differ from previous years because of important changes in the definition "coniferous sawnwood" (equivalent to sawn softwood). It includes both "planed" and "rough" sawnwood. Finger-jointed wood and continuously shaped mouldings, which were included in the prior definition, have been excluded. As a result this chapter focuses on the changes from 1998 to 1999 and updates the market developments for 2000 where unofficial information is available.

8.2 ECE region market developments

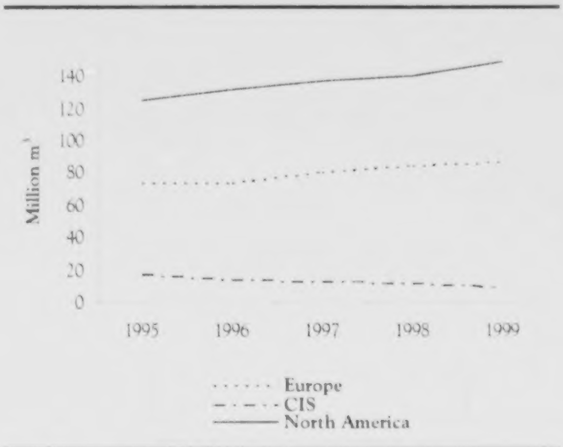
Apparent consumption of sawn softwood rose strongly to a region-wide record level in the ECE region in 1999, by 4.1% over 1998. However the improvement was not universal as consumption in the CIS fell heavily as evidenced by an 18% drop in the Russian Federation[1] Consumption tables with individual country volumes for the last few years may be found in the annex.

Nevertheless, with strong North American, European and Asian demand for sawnwood, ECE region exports rose by 4.8%. Trading was active, both between countries in the region and with countries outside the region. More countries outside the ECE region are becoming sources of supply, including for temperate species, for example from plantation radiata pine from Chile, New Zealand and other countries. Sawn softwood is also flowing into the ECE region from tropical sources such as Brazil.

At the sub-region level, Europe and North America continued extremely strong trends in 1999 with record levels of consumption, production and trade (graph 8.2.1) (table 8.2.1).

GRAPH 8.2.1

Consumption of sawn softwood, 1995-1999



Source: ECE/FAO TIMBER database, 2000.

The Timber Committee forecasts, from its September 1999 session, predicted continued growth in consumption in 2000, by 1.8% for Europe and by 0.4% for North America. The Committee had foreseen the fall in 1999 consumption in the Russian Federation, although not quite to the real depth, and predicted a rebound by 17% in 2000.

It should be noted that the forecasts in the table have been adjusted to be consistent with the actual 1999 statistics, by applying the forecast change from 1999 to 2000 to the 1999 statistics received earlier this year.

After the downturn due to the Asian economic crisis in 1997 and 1998, Japan's importance as an export market for European sawnwood rebounded and continued to expand in 2000 (graph 8.2.2). The ECE region is now supplying about 80% of Japan's sawnwood imports which were 9.7 million m^3 in 1999, down from a maximum of 12.6 million m^3 in 1997. The sawnwood breakdown after the first 5 months of 2000 is: North America, 53% market share, Europe 21%, and Russian Federation 6%. Softwoods, which are 88.2% of imports, are combined with sawn hardwood in the graph. Tropical hardwoods could be estimated from the statistics to be 14% of Japan's imports.

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[1] The extent of the drop in apparent consumption would have been less if the fall reported in production had been less. There are many reasons that full volume of production might not be reported, for example, gaps in regional statistical reports or lack of full disclosure.

TABLE 8.2.1

Sawn softwood balance in the ECE region, 1995-1999

(million m^3)

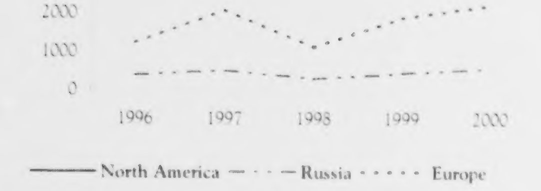
	1995	*1996*	*1997*	*1998*	*1999*	*Timber Committee estimates for 2000 **
EUROPE						
Production	78.44	78.28	83.90	86.58	90.07	92.04
Imports	27.58	28.36	31.97	34.66	35.82	36.18
Exports	31.81	31.99	35.60	37.01	38.86	39.71
Net trade	4.23	3.63	3.48	2.20	2.82	3.53
Apparent consumption	74.21	74.37	80.15	84.10	86.84	88.52
RUSSIAN FEDERATION						
Production	22.53	17.53	16.68	15.61	15.13	18.45
Imports	0.04	0.01	0.33	0.01	0.00	0.00
Exports	5.64	4.35	4.78	4.63	6.11	7.75
Net trade	5.59	4.34	4.45	4.63	6.10	7.75
Apparent consumption	16.93	13.19	12.22	10.98	9.03	10.70
NORTH AMERICA						
Production	135.34	141.83	145.22	145.92	155.12	154.24
Imports	41.36	43.75	43.32	44.32	45.55	46.29
Exports	52.14	53.55	51.55	50.06	51.56	50.85
Net trade	10.79	9.79	8.23	5.74	6.01	4.56
Apparent consumption	124.55	132.04	136.99	140.18	149.11	149.67

* = The Timber Committee's forecast trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

GRAPH 8.2.2

ECE region sawnwood exports to Japan, 1996-2000



Note: Includes both sawnwood and hardwood.
Data for 2000 estimated.

Source: Japan Wood-Products Information and Research Center, July 2000.

8.3 North American market developments

The consumption of sawnwood in North America continued to rise in 1999 by approximately 9 million m^3 to reach a record 149.1 million m^3. Canadian apparent consumption increased dramatically by nearly 18% or by over 3 million m^3 to accommodate increased demand for housing construction. It is possible that some of the Canadian "consumption" was further processed and exported as millwork, mouldings or other value-added products. A sustained high level of residential (1.6 million homes in 1999 and a possibly a similar level in 2000) and non-residential construction in the United States in 1999 drove up demand by 5.8 million m^3. Most of the United States consumption increase came from increased domestic production, which rose by 5.0 million m^3 to reach a record 86.9 million m^3 (table 8.3.1).

The supply of sawn softwood continues to shift in North America from west to east. For example Quebec's production has doubled in the last decade and capacity at 19.5 million m^3 now exceeds all other provinces and states, with the exception of British Columbia whose capacity has fallen by 7% over the last 5 years to

32.9 million m^3 in 1999 (*International Woodfiber Report*, 1999). United States western sawmills continue to decline in numbers and production, although they have succeeded in finding new raw materials supplies, not only from non-federal lands, but also from the decreased log exports and the reduced demand for peeler logs as plywood production drops.

Demand for sawn softwood is not only for construction, but considerable volumes go into higher value uses like furniture, mouldings, glulam and other value-added products. Even greater volumes go into low value uses such as pallets, crating and packaging.

Home construction in North America is nearly 95% wood-frame, in contrast to concrete, brick or other non-wood materials in Europe. Houses are considerably larger too and a typical new 2-story house would average 240 m^2, necessitating approximately 35 m^3 of sawnwood and 100 m^3 of panels (primarily OSB and plywood) (National Association of Home Builders, 2000). Many new homes are built with some engineered wood products such as glulam beams and I-beams in ceiling and floor assembles.

Included in the construction classification is sawnwood used for building decks. Approximately 25% of all new homes have a wooden deck on the outside, equivalent to the European cement or brick terrace. In addition, decks are one of the most common remodelling

TABLE 8.3.1

Production of sawn softwood, 1996-1999

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
EUROPE of which :	78,277	83,902	86,576	90,073	3,497	4.0
Main exporting countries	59,939	65,415	67,053	69,659	2,606	3.9
Germany	13,123	13,682	13,807	14,770	963	7.0
Sweden	14,170	15,419	14,874	14,608	-266	-1.8
Finland	9,300	10,600	11,300	11,700	400	3.5
Austria	7,950	8,254	8,534	9,558	1,024	12.0
France	6,506	6,800	7,197	7,450	253	3.5
Poland	4,280	5,010	5,441	5,275	-166	-3.1
Czech Republic	3,100	3,100	3,100	3,251	151	4.9
Latvia	1,510	2,550	2,800	3,047	247	8.8
Other countries of which :	18,338	18,487	19,524	20,414	890	4.6
Norway	2,400	2,500	2,525	2,551	26	1.0
United Kingdom	2,140	2,214	2,253	2,387	134	5.9
Turkey	2,308	2,032	2,101	2,322	221	10.5
Romania	924	1,115	1,456	1,845	389	26.7
Switzerland	1,240	1,100	1,200	1,300	100	8.3
Russian Federation	17,530	16,675	15,610	15,130	-480	-3.1
Canada	61,828	63,764	64,082	68,235	4,153	6.5
United States	80,004	81,453	81,838	86,888	5,050	6.2
NORTH AMERICA	141,832	145,217	145,920	155,123	9,203	6.3

Source: ECE/FAO TIMBER database, 2000.

projects, both for the pleasure of the owners and to enhance the value of the house for future resale. In 1997 the value of the wood in decks in the United States was \$3 billion, or approximately 3.5 million m^3 (*Qualified Remodeler* as reported by the *Forest Products Journal*).

In addition to new home construction, the millions of existing houses are aging and require maintenance and rehabilitation. Many homeowners prefer to remodel their present home rather than purchase a new one. Thus the repair and remodelling market, often supplied through large DIY stores, is a key element of demand for sawnwood (including hardwoods), as well as other wood products such as flooring, mouldings and millwork. In 1999, 37.2 million m^3 went into repair and remodelling while 44.7 million m^3 fed the residential construction demand. The remainder, approximately 37.4 million m^3 was used in non-residential construction and materials handling, i.e. shipping containers and pallets.

Despite the dependence of wood for construction, substitution is occurring in the United States. Wood wall framing with solid sawnwood fell from a 93% market share in 1995 to 83% in 1998. Floor framing dropped from 59% to 42% and roof framing by a lesser degree during the same period (due to substitution by engineered wood products, specifically wooden I-beams) (*Cintrafor News*, 2000).

Overall in North America, sawn softwood prices rose by 15.2% in 1999, partly because of an early depletion of stocks (*Random Lengths* and *World Wood Review*, 2000). In 1999 at the time of publishing the last *Review*, the prices of North American sawnwood were at near record highs. But since mid-1999 the trend has been down. Last summer softwood lumber prices in North America were at an average of \$480/thousand board feet, only \$10 below their record 1994 price. Since then the price has fallen 39% to a level of \$295 at the end of July, 2000 (based on preliminary information from *Random Lengths*) (graph 8.3.1).

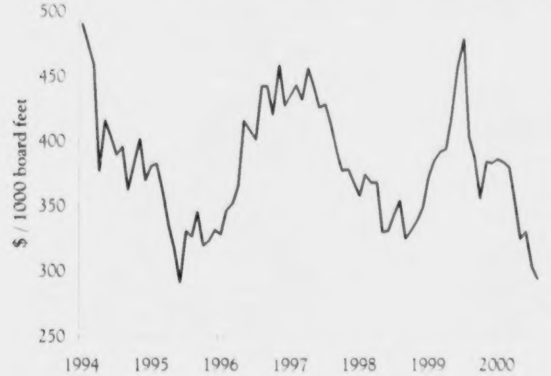
The last time the price of lumber was this low was in 1995, just before negotiations between Canada and the United States which resulted in the Softwood Lumber Agreement of 1996 (discussed below). While it is beyond the Review to forecast prices, it is evident that price cycles in North America are becoming shorter. Some large sawnwood and panel manufacturers announced lower-than-expected second-quarter earnings due to low product prices (*Wall Street Journal Europe*, June, 2000).

United States *imports*, of which 95% by volume come from Canada, rose to almost 45 million m^3 (table 8.3.2). The share of Canadian imports fell from 97% in 1998, apparently as sawnwood was imported from other sources graph 8.3.2). Non-Canadian imported sawnwood was not less costly based on unit values (\$159 per m^3 from Canada in 1999 versus \$191 to 335 from South and Central America, \$214 to 283 from Europe, \$224 from Russia and \$306 from New Zealand as calculated from USDA Foreign Agricultural Service statistics on import volumes and values). The long-established, cross border trade shows a close importer-exporter relationship. In 1999 Canada produced a record 68.2 million m^3 of sawn softwood, of which a record volume, 42.5 million m^3, flowed south into the United States.

This trade between the two North American countries is partly influenced by the exchange rate

GRAPH 8.3.1

North American sawn softwood prices, 1994-2000

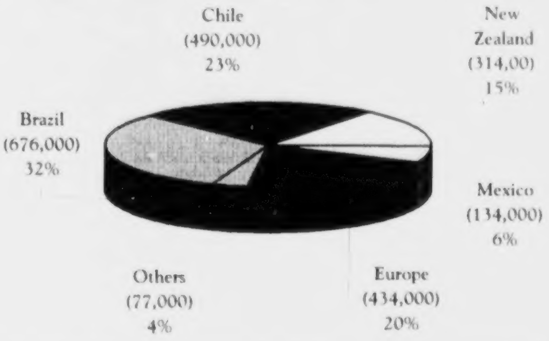


Note: Prices are for a mix of qualities, species and sizes.
Source: *Random Lengths Yardstick*, 2000.

GRAPH 8.3.2

United States sawn softwood import sources (without Canada), 1999

(m^3)



Source: USDA Foreign Agricultural Service, 2000.

TABLE 8.3.2

Exports and imports of sawn softwood, 1996-1999

(1,000 m³)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
EXPORTS						
EUROPE	31,992	35,603	37,013	38,859	1,846	5.0
of which :						
Sweden	10,960	10,902	10,975	11,040	64	0.6
Finland	7,016	7,509	8,204	8,269	65	0.8
Austria	4,000	4,838	4,752	5,626	874	18.4
Latvia	1,286	2,060	2,250	2,447	197	8.8
Germany	1,604	1,895	2,223	1,968	-255	-11.5
Romania	556	917	1,210	1,494	284	23.5
Czech Republic	1,384	1,397	1,231	1,480	249	20.2
Poland	592	831	709	760	51	7.2
Norway	775	700	691	755	64	9.3
Belgium-Luxembourg	257	275	400	533	133	33.3
France	328	469	511	525	13	2.6
Portugal	440	400	416	325	-91	-21.9
Other countries	2,794	3,410	3,441	3,637	196	5.7
Russian Federation	4,350	4,780	4,632	6,105	1,473	31.8
Canada	49,618	47,664	47,177	48,336	1,159	2.5
United States	3,929	3,886	2,886	3,225	339	11.7
NORTH AMERICA	53,547	51,550	50,063	51,561	1,498	3.0
IMPORTS						
EUROPE	28,358	31,968	34,661	35,816	1,155	3.3
of which :						
United Kingdom	5,344	6,491	6,490	6,604	114	1.8
Italy	4,632	5,145	5,274	5,550	276	5.2
Germany	4,466	5,280	5,301	5,319	18	0.3
Denmark	1,748	2,133	4,046	3,500	-546	-13.5
Netherlands	2,739	2,889	2,923	3,352	429	14.7
France	1,884	1,960	2,237	2,539	302	13.5
Spain	1,135	1,275	1,275	1,357	82	6.4
Belgium-Luxembourg	1,298	1,270	1,500	1,407	-93	-6.2
Austria	900	904	841	1,035	194	23.1
Norway	800	958	918	775	-143	-15.6
Other countries	3,411	3,663	3,856	4,378	522	13.5
Canada	768	804	618	742	124	20.1
United States	42,985	42,514	43,704	44,807	1,103	2.5
NORTH AMERICA	43,753	43,318	44,322	45,549	1,227	2.8

Source: ECE/FAO TIMBER database, 2000.

between the United States dollar and the Canadian dollar. Since 1997 the Canadian dollar had been losing strength relative to the United States dollar which made imports from Canada that much more attractive. However throughout 1999 the Canadian currency gained a little strength. The mid-2000 exchange rate was at C$1.45 per US$1, approximately the same as at the end of 1999.

Due to strong demand and dollar, United States sawn softwood imports rose 2.5% and accounted for 35.3% of total consumption (*Wood Statistical Roundup*, AF&PA, 2000). Sawnwood imports from overseas sources in 1999 were a record 2.0 million m^3, up 46% from 1998 (*Random Lengths Export*, 2000). The value of the imported sawnwood rose 41% to $570 million. Imports from non-Canadian sources are forecast by Random Lengths to grow slower in 2000, by 10% to reach 2.2 million m^3. Accounting for 56% on the non-Canadian imports, South America led with four of the top 10 suppliers: Brazil, Chile, Argentina and Uruguay. Most of this volume was industrial grade lumber, although the Brazilian sawnwood included boards and dimension for treating. Mexico was the only top-10 supplier to decline as domestic consumption increased and more value-added wood products were exported instead.

European presence in the United States continues to grow. Mostly 2x4 studs and dimension (fixed sizes) are imported from Austria, Sweden, Lithuania, Germany, Finland and Russia in descending order of volume in 1999 (USDA Foreign Agricultural Service, 2000).

The *Softwood Lumber Agreement* has regulated trade between Canada and the United States over the last 4 years. Established in 1996 it was designed to restrict the Canadian share of the United States sawn softwood consumption. As a result the percentage share has decreased, although higher United States consumption over the period meant that Canadian volumes rose by 7.9% or almost 3 million m^3.

It will be up for renewal in March 2001 and key players are preparing arguments for and against continuation. The agreement initially resulted in higher prices of sawnwood and higher costs, mainly for United States home buyers.

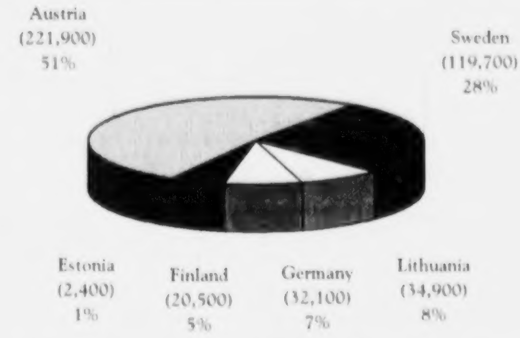
One result of the agreement has been increased exports from the 8 Canadian provinces outside of its quota, by 163%, to 6.0 million m^3 (following capacity expansions). Western United States sawmills were sheltered under the agreement and production rose by 12% to 38.9 million m^3 (*Wood Markets Monthly*, 2000). Following the agreement, exports fell to the United States from the 4 provinces under quota restrictions (Alberta, British Columbia, Ontario and Quebec).

The European and Russian market share of United States imports increased dramatically in 1999, by over 200%, although the volumes are dwarfed by Canada (graph 8.3.3). Austria leads the European invasion with over 220,000 m^3, followed by Sweden with 120,000 m^3. These countries have the possibility of producing lumber for the United States market with its particular specifications, thus qualifying for one of the North American grade stamps. In the first half of 2000, Lithuania shipped 17% of its total sawn softwood exports to North America, in part aided by a Canadian joint venture-built sawmill. The third largest European supply source for the United States in 1999 with 35,000 m^3, Lithuania looks poised to increase market share in 2000 as volumes almost doubled.

GRAPH 8.3.3

United States sawn softwood import sources from Europe, 1999

(m^3)



Source: USDA Foreign Agricultural Service, 2000.

According to Foreign Agriculture Statistics, no sawnwood was imported into the United States in 1998 from the Russian Federation. However shipments of 13,000 m^3 were recorded for 1999.

Canadian *exports* surged by 1.2 million m^3 or by 2.5% in 1999 due to strong demand from the United States and offshore markets. Shipments to Canada's most important offshore market, Japan, surged 14% in 1999, partly due to increased kiln drying capacity to meet new, more stringent Japanese standards.

The exports of sawn softwood from the United States have been seriously constrained by the strength of the dollar over most trading partners' currencies. It is too early to say whether the almost 12% increase in 1999 exports, from relatively low and falling levels, is the bottoming out of the trend. There are a number of reasons for reduced United States exports:

- Strong domestic market and increased consumption
- Increasing constraints on the former wood basket, i.e. the National Forest System
- Increasingly lower-priced competition in major export markets.

It appears that United States market share of sawn softwood in Japan is giving way to imports from Europe and elsewhere. Most regular suppliers to the Japanese market fared better then the United States as the Asian economic crisis came to an end, but United States exports to Japan fell 3% (*Random Lengths Yardstick*, 2000). Since a recent high of 145 yen per dollar in August 1998, the dollar has lost strength and was at 105 yen at the end of 1999 and was a little higher, at 109 yen per dollar, in mid 2000.

With the drop in exports to Japan, Canada became the most important export destination in 1999 (for all wood products combined). The United States shipped $1.7 billion worth of wood products to Canada in 1999 as compared to $1.6 billion to Japan. In the first 4 months of 2000 the United States exports of sawn softwood had risen another 9.6% in volume. For perspective, during the same period the United States exports of sawn hardwood to Canada, again the major export destination, rose by 22.4% in value and 11.9% in volume (367,000 m^3 of sawn hardwood versus 232,000 m^3 of sawn softwood)(USDA Foreign Agricultural Service, 2000).

In the United States sawnwood production was up almost 5% higher in the first four months of 2000 compared to the same period in 1999 (*Eastern Quotes & Comments*, July, 2000). Even higher production will be possible when some sawmills complete their capital investment improvements and the new mills being built begin production later this year. As shipments were only 3.4% ahead of the first 4-month period of 1999, stocks were being built. Combined with a slowing summer market, which is abnormal for this period of peak shipments, the result was the fall in prices mentioned above. A number of economic indicators were beginning to point to a slow down in the United States economy in mid 2000. For example mortgage rates had risen since the 30-year low in April 2000.

Canadian production continued at record rates in 2000, up 6.8% in the first quarter compared to the first quarter 1999 production (Statistics Canada, 2000). These gains were greatly aided by increased productivity. The largest increase, a rise of 11.7%, was reported in British Columbia, which produced 57.3% of the country's sawn softwood. Quebec rose less, by 4.7%, and was at 22.1% of the national production.

Canadian exports to Japan were strong and there have been some indications of renewed interest in United Kingdom markets as evidenced by some certified sawnwood being shipped in 2000.

Restructuring is occurring in the sawmilling sector in North America. In 1999 over 6.6 million m^3 of sawnwood was "traded" before reaching the marketplace due to acquisitions and mergers

Petroleum prices leapt up in North America in mid 2000 as a result of production constraints by OPEC. Shipping rates were already forecast to increase before the hike in diesel and gasoline prices, but now all transportation costs are being a closely followed. These rises may also affect imports coming into North America as well, since the oil market is global.

In summary, the strong market trends in 1999 were continuing in 2000 in North America. Despite concern about slight rises in mortgage rates, residential and other construction was at high levels and export markets, especially for Canada, were exhibiting improvements over 1999. There are continued mergers and acquisitions between North American sawnwood producers with a resulting loss of identity between Canadian and United States firms and integration into engineered wood products (more about EWP companies in Chapter 11).

8.4 European market developments

In line with the overall strength of economies, particularly the construction sector, apparent consumption in many countries in Europe rose in 1999 and overall European consumption moved up 3.2% to a record 90.1 million m^3. Consumption rose significantly in many countries, often to new highs, for example: Austria, up 7.4% to a 5.0 million m^3, France, up 6.1% to 9.5 million m^3, Germany, up 7.3% to 18.1 million m^3, Italy, up 4.5% to 6.2 million m^3, the Netherlands, up 15.5% to 3.3 million m^3 and the United Kingdom, up 2.7% to 8.9 million m^3. However the trend was not universal and consumption appeared to have fallen in Sweden, by 8.0%, part of which may be due to sawnwood stock reductions, although domestic demand was rising in early 2000.

A 7.0% increase in production of sawn softwood in Germany in 1999, to a record 14.7 million m^3, coupled with a slight decrease in production in Sweden, has resulted in Germany being the largest producer of sawnwood in Europe. Higher consumption in Germany meant that most of that increase went to the domestic market as imports were stable and exports fell 11.5%. Part of the increase came from the new, large sawmills built in the former eastern Germany. The controversy over the substantial public funds which went into building some of these mills has quieted as no more large, publicly-funded sawmills are foreseen.

The year 1999 was the second consecutive year of decreased production in Sweden, a trend not shared by other large European producers. The *Review* reported last year that bankruptcies had resulted in 600,000 m^3 of reduced capacity in 1999, equivalent to the fall in national production. Rationalization of capacity continues in the Swedish sawmilling sector as smaller and older mills are not renovated, but rather closed (*Timber and Wood Products*, July, 2000). The older mills are under competitive pressures not only from more efficient domestic mills, but also competition from other countries for the same export markets. As exports rose in both 1998 and 1999, following a drop in 1997, this confirms that sawmills' sawnwood inventories are at low levels.

In central and eastern Europe stronger consumption was seen in Estonia, Hungary, Latvia, Romania, Slovakia and Turkey, while weaker consumption occurred in the majority of countries. The exports of pallets, manufactured primarily from softwoods in Europe, has increased from central and eastern Europe with the result that some "consumed" sawnwood is later exported in the form of pallets. Corresponding directly to economic cycles, crating, pallets and containers were in high demand as manufacturing output necessitated materials handling and packaging materials.

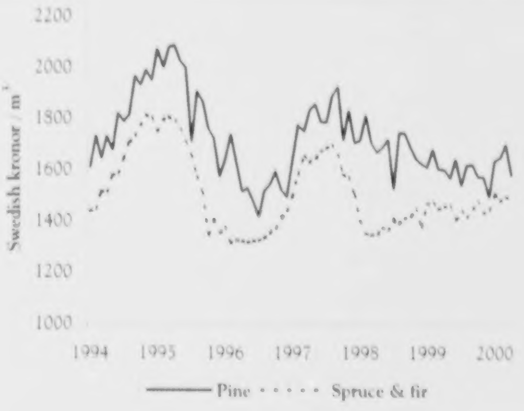
Production also rose in Austria, by 12.0% to reach 9.6 million m^3 and like Germany, most of this went to domestic consumption as exports remained constant. Likewise Finland increased production to a record 11.7 million m^3, most of that going to the 12.5% increase in domestic consumption. Production increases did not fill all of the growth in consumption in many European countries and imports rose significantly in Austria, up 23.1% to over 1 million m^3, France, up 13.5% to 2.5 million m^3, Italy, up 5.2% to 5.6 million m^3, the Netherlands, up 14.7% to 3.4 million m^3, and the United Kingdom, up 1.8% to 6.6 million m^3.

In the United Kingdom in mid 2000 the exceptionally high demand for sawnwood for fencing was being met by domestic production and imports. Successful home improvement television programming has resulted in increased demand for home fences, as well as wooden decks (*Timber & Wood Products*, July, 2000). Decks were rare a few years ago, but due to successful promotional programmes, they have been integrated into the United Kingdom and Ireland markets. The other market for fencing is for sound barriers along motorways and railways. Millions of cubic metres of treated sawnwood have been used for walls along United States highways to reduce noise levels in urban areas and the trend is starting in Europe.

Prices of sawn softwood were generally declining since mid 1997, but showed strength in early 2000 as evidenced by Swedish export prices (graph 8.4.1). By the end of 1999 stock levels were extremely low and thus prices were rising. However in mid 2000 stocks remained low and, contrary to experience, prices were softer—perhaps only a temporary situation.

GRAPH 8.4.1

Sawn softwood prices in Sweden, 1994-2000



Source: Swedish Wood Exporters Association, 2000.

As mentioned in chapter 3, the December 1999 windstorms seem to have had minor effects on the sawnwood prices, which remained stable, partly because of strong demand in 2000. The prices in France showed a strengthening in the first 4 months of 2000 (table 8.4.1). There appeared to be no direct correlation between the change in price and the level of quality.

TABLE 8.4.1

Sawn softwood prices in France, 2000

Species	*Price range in April 2000* *(French francs per m^3)*	*Change from January to April 2000*
Maritime pine	1,140 to 2,085	+1.0 to +2.3%
Scot's pine	1,035 to 1,825	-0.4 to +2.2%
Spruce & fir	1,035 to 1,825	-0.6 to +2.5%

Note: Price varies by quality. Before taxes and FOB at the sawmill.

Source: *Centre des Etudes de l'Economie du Bois, 2000.*

European sawn softwood prices in mid 2000 were being affected by currency fluctuations. The euro is currently at an all-time low versus the dollar and the pound sterling. Therefore those countries which sell in euros, both within the euro zone and from outside, became more attractive to importers like the United Kingdom which pay in pounds (as at this time the United Kingdom is not in the euro zone). As Sweden is also not in the euro zone, but Finland is, the exports of the latter with the weaker euro have been doing well in markets like Japan and the Middle East. Likewise the United States dollar is very strong compared to European currencies with the result that wood products imports from the United States, or any wood traded in dollars, is relatively expensive.

European *imports* rose by 3.3% in 1999 to record levels. Strong gains in apparent consumption in the United Kingdom, Italy, the Netherlands, France and Austria were supported by greater imports. In an important contrast to higher imports to countries with increased consumption, German imports were almost the same as 1998, i.e., 5.3 million m^3 as increased production compensated for demand.

Europe's net trade of sawn softwood strengthened in 1999 as exports rose 5% over 1998. The large Nordic exporters had minor changes, less than 1%, however other countries such as Austria, Latvia, Romania and the Czech Republic had record exports. Considerable strength in exports in many central and eastern European countries was not universal as some countries either had production set-backs or increased domestic consumption.

A number of countries in central and eastern Europe reported important developments in production and trade of sawn softwood, sometimes on relatively small volumes. Often exports increased more than production, indicating the possibility of reduced consumption. In Romania the exports have tripled since 1996 and were reported at 1.5 million m^3, in line with production increases, but indicating an apparent consumption of 352,000 m^3. As discussed in the special chapter on China, often there is some level of wood consumption at the local level which is never recorded in the official statistics.

Following the slump in 1998 due to the Asian economic crisis, European exports to *Japan* resumed and reached 1.8 million m^3 in 1999 (Japan Ministry of Finance, as reported by *Japan Lumber Journal*, 2000). Although a slight fall in all wood imports is forecast for 2000, by 1.5% to 28.6 million m^3, the European share of sawn softwood is forecast to rise by 8.0% to reach 2.0 million m^3 (*Japan Lumber Journal*, 2000). Part of the success in European exports to Japan in 1999 and early 2000 is due to the weaker euro as compared to the yen. High-quality products have been cited as another reason (*Japan Lumber Reports*, 2000). In 1999 there were 28 European countries listed as sources of imports, of which a growing number and volume were from central and eastern Europe. In addition several CIS countries are exporting sawnwood and logs to Japan, of which Russia and Ukraine. Japan's domestic production of sawnwood, largely based on logs from Russia and North America, continues to decline in favour of imports.

The Japanese Forestry Agency revised its imports forecast in mid 2000 based on early trade reports. European sawnwood imports were forecast to be 13.5% higher than in 1999 at a level of 2.1 million m^3. In a further development, the Nordic Timber Council claims to have reversed the original 80% sawnwood share of the timber mix exported to Japan to now be 80% of further-processed products.

Production and trade in the *Baltic countries* is an annual theme of the Review because of its fast evolution and impact on western European sawnwood markets. However it is not possible to categorise these 3 countries together in terms of sawn softwood markets. Production increased in Estonia and Latvia by 10.3 and 8.8% respectively. Latvia's production is now over 3 million m^3, of which 80% is exported, despite a rise by 24% in domestic consumption. Estonia's production rose too, by 10.3%, and exports rose more, by 17.7%.

The Lithuanian situation is different – the country has less forests, and the proportion of conifers is less. Production fell in Lithuania in 1999, by 5.6%, and was considerably below the 1996 peak of 1.4 million m3, however exports increased by 3.3% for sawn softwood, and by 10% for all softwood combined (including logs). Some of Lithuania's exports of softwood are based on upgraded sawnwood imports. The continuing decline in production from state-owned forest enterprises, falling 16% in 1999, is partly due to closing of some mills (*Information Bulletin*, Centre of Forest Economics, 2000). In the first part of 2000, Lithuania's exports had increased by 25% (softwood and hardwood combined) and the United States had replaced the United Kingdom as the second largest export destination behind Germany.

The trade links with Russia, and its 1998 economic crisis, surfaced in the Baltic countries balance sheets in 1999. Nevertheless they have proved themselves to be market-oriented and have diversified from sawnwood into higher value-added products such as dimension (cut-to-size), components, turnings, planed and moulded sawnwood, flooring and panelling, pallets, furniture, millwork and now engineered wood products, i.e. glulam (*Baltic Timber Journal*, 2000).

It is extremely interesting to note the fast development in Baltic imports from the CIS of both sawnwood and roundwood. This imported sawnwood is often reprocessed and upgraded and then exported. Roundwood is both re-exported and processed into sawnwood. Some roundwood from Belarus, which is illegal to export except to Russia because of free trade agreements, is first imported into Russia and then re-exported into the Baltic countries.

TABLE 8.4.2

Baltic countries sawn softwood production, 1997-1999

	1997	*1998*	*1999*	*% Change 1998-1999*
Estonia	656	780	860	10.3%
Latvia	2550	2800	3047	8.8%
Lithuania	1130	900	850	-5.6%

Source: ECE/FAO TIMBER database, 2000.

TABLE 8.4.3

Baltic countries sawn softwood exports, 1997-1999

	1997	*1998*	*1999*	*% Change 1998-1999*
Estonia	597	690	812	17.7%
Latvia	2060	2250	2447	8.8%
Lithuania	871	501	517	3.3%

Source: ECE/FAO TIMBER database, 2000.

TABLE 8.4.4

Baltic countries sawn softwood imports, 1997-1999

	1997	*1998*	*1999*	*% Change 1998-1999*
Estonia	52	85	146	73.3%
Latvia	21	29	118	306.9%
Lithuania	127	189	247	31.2%

Source: ECE/FAO TIMBER database, 2000.

TABLE 8.4.5

Baltic countries sawn softwood apparent consumption, 1997-1999

	1997	*1998*	*1999*	*% Change 1998-1999*
Estonia	111	175	194	11.3%
Latvia	511	579	718	24.0%
Lithuania	386	588	580	-1.3%

Source: ECE/FAO TIMBER database, 2000.

Trade was extremely active in 1999, both between European countries and with countries outside Europe. Europe's exports to the United States have increased dramatically in 1999 as shown above. These export trends continue in 2000 as evidenced by Germany's exports of sawn softwood which increased by 51% in the first quarter of 2000 (table 8.4.6). It is also noteworthy that 2 of the 3 largest export destinations also sustained heavy storm damage in December 1999, although possibly these sales were concluded before 2000 and their shipments were recorded this year.

TABLE 8.4.6

Exports of sawn softwood from Germany, 1999-2000

	1999 1st quarter	*2000 1st quarter*	*% Change*
France	100,796	129,602	28.6
Italy	84,063	103,408	23.0
Switzerland	13,022	98,758	++
Netherlands	51,234	65,338	27.5
Belgium	23,361	43,983	88.3
Austria	29,368	24,943	-15.1
Spain	5,726	8,977	58.8
United Kingdom	3,965	8,785	120.5
United States	670	7,415	++
Luxembourg	3,188	5,334	67.3
Japan	11,063	4,669	57.8
Czech Republic	2,753	4,478	62.6
Denmark	2,751	4,336	57.6
Slovenia	4,606	3,408	-26.0
Poland	970	1,061	9.4
Others	3,072	2,790	-9.2
Total	340,628	517,283	51.9

Note: ++= increase over 200%.

Source: ZMP, 2000.

Indications in mid 2000 were that the two main exporting countries, Sweden and Finland, were well on the way to even higher volumes of exports (national association statistics as reported by *L'Echo des Bois*, July, 2000). Sweden had by the end of May 2000 sold a little more, at 5.7 million m^3, than in 1999 with most of the increase going to the United Kingdom. Finland had increased sales by 5.5%, with most of the increases going to regular "customers" in the United Kingdom, Germany, France and the Netherlands, as well as Japan. In the first quarter of 2000, sawnwood production at 3.1 million m^3 was 13% greater than in the same 1999 period (Finnish Forest Industries Federation, 2000). Early statistics on trade do not reflect production and at this time the direct effects of the surplus roundwood from the storms of December 1999 cannot be ascertained.

Imports of sawn softwood in France in the first quarter of 2000 surged by 25% to reach 713,000 m^3 from the same 1999 period (table 8.4.7). At that rate 2000 would overtake the record level of 2.6 million m^3 of 1980. The softening construction-derived demand in France is mainly met by increasing sawnwood production which is mainly supplied by the storm-felled timber during this year (*L'Echo des Bois*, June, 2000). However imports mainly from what customs classifies as "northern" sources, make up the majority of the imports.

TABLE 8.4.7

Imports of sawn softwood by France, 1999-2000

	1999 1st quarter	*2000 1st quarter*	*% change*
Finland	228,446	214,847	-6
Sweden	116,487	116,728	0
Russian Federation	42,630	71,435	68
Estonia	12,230	37,258	205
Latvia	20,025	25,199	26
"North" Europe	428,817	475,450	11
Other Europe	113,641	209,199	84
Canada	19,619	7,427	-62
United States	2,523	2,343	-7
Africa	5,807	7,971	37
Other	280	1,581	465
Total	571,097	712,836	25

Source: French Customs Service as reported by *Le Commerce International du Bois*, June, 2000.

Timber Committee forecasts from the September, 1999 session were for continued growth in Europe's 2000 production and trade. With consumption forecast to grow almost 2%, early reports confirm the prediction with production and trade active in 2000.

In summary, 1999 was certainly a record setting year in Europe, with much of the gains coming from a few countries in central and eastern Europe, as well as Germany. The year ended with a catastrophe, the December storms which directly affected the sawmilling sector in the following months. The trade in 2000 appears at mid year to be escalating towards new record levels although some weakness in prices is evident.

8.5 CIS market developments

Exports of sawn softwood from Russia were reported to have shot up by nearly 32% to 6.1 million m^3, the first important rise since 1992. Exports increased despite a reported continued decline in production, down by 3.1% to 15.1 million m^3, the lowest level recorded. If production declined and imports remained at minimal levels, then how did exports increase? The answer is in an 18% drop in apparent consumption due to the continued effects of the 1998 economic crisis. (Readers' attention is drawn to the footnote at the beginning of this chapter.)

The increase in exports occurred despite a rise to 5% in export duty in February 1999 on sawn softwood and logs. The duty doubled from 5% to 10% in December 1999 (*Japan Lumber Reports*, 1999). A positive development is the reduced requests to buyers for prepayment of Russian sawmill production before manufacturing and exporting (*L'Echo des Bois*, 2000).

In 2000 Russian exports to the United Kingdom were increasing, partly aided by a weaker rouble, especially from the Arkangelsk port where some mills are undergoing improvements (*Le Commerce International du Bois*, June, 2000 and *Timber & Wood Products*, July, 2000). In 1999 the Swedish share of the German sawnwood market was reduced while the Russian and Belarussian share increased. This situation seems to have continued in the first quarter of 2000, partly due to the Swedish krona/German mark ratio, although the effects of the December 1999 storms may be influencing the trade in the first half of 2000 (table 8.5.1).

TABLE 8.5.1

Imports of sawn softwood by Germany, 1999-2000

	1999 1st quarter	*2000 1st quarter*	*% change*
Finland	202,291	203,597	0.6
Czech Republic	110,447	128,497	16.3
Sweden	184,412	127,099	-31.1
Russia	73,880	103,935	40.7
Poland	71,233	87,904	23.4
Belarus	52,062	85,386	84.0
Lithuania	68,135	68,325	0.3
Latvia	68,808	65,588	-4.7
Austria	59,223	40,518	-31.6
Norway	43,023	37,690	-12.4
Estonia	23,445	31,581	34.7
Belgium	7,044	18,702	165.5
Ukraine	7,557	9,932	31.4
Slovakia	8,054	9,801	21.7
Canada	11,106	8,832	-20.5
Romania	4,667	8 379	79.5
United States	9,427	7,495	-21.1
Netherlands	2,888	5,064	75.3
Other	8,703	12,143	39.5
Total	1016,435	1060,405	4.3

Source: ZMP, 2000.

The Timber Committee forecast a strong production increase in the Russian Federation in 2000, with a 22% rise to bring it back to the 1995 level. If consumption does not increase again in Russia, the result could be higher exports than the predicted 27.1% increase to 7.8 million m^3, a volume not seen since before 1992 by the former USSR.

8.6 Conclusion

ECE region sawn softwood consumption, production and trade rose to record levels in 1999, benefiting on one hand from strong economies in North America and Europe, and on the other hand from strength following the end of economic crises in Japan and the Russian Federation. Nevertheless the picture was not universal as some countries, especially in the CIS, continued to suffer under the transition process.

The storms that ransacked Europe's forests in December, 1999 have not had appreciable effects on sawnwood markets. Demand in 2000 was strong in most parts of the ECE region and in many countries production was rising as well as trade according to early reports. The Timber Committee's forecasts for 1999 were conservative compared to actual volumes and increases in production and trade were forecast for most countries in 2000.

Chapter 9

Sawn Hardwood – Consumption, Supply and Trade

Highlights

- Consumption of sawn hardwood in the ECE region rose in 1999, by 2.2%, due to high demand for furniture and construction-related uses as well as other uses, such as packaging and pallets.
- Trade was at record levels in North America and Europe in 1999 and in early 2000 trade continued to accelerate.
- North America and Europe each produced roughly 1 million m^3 more of sawn hardwoods in 1999.
- The windstorms which felled millions of cubic metres of hardwoods at the end of 1999 in Europe resulted in higher than normal levels of production and trade in 2000.
- Following the 1998 economic crisis in Russia, the CIS continued to have weak demand and production of sawn hardwood, although exports rose slightly.

9.1 Introduction

Overall the sawn hardwood markets in the ECE region have risen with construction-related demands for high-value hardwoods, as well as the need for low-quality sawnwood for pallets, crating and other non-appearance uses. This chapter analyses the developments in sawn hardwood markets in the ECE region as a whole and then in the individual sub-regions. Sawn tropical sawnwood is analysed separately in chapter 14. A separate analysis of secondary-processed wood products in chapter 6 describes the end uses, and indirectly, the demand for sawn hardwood.

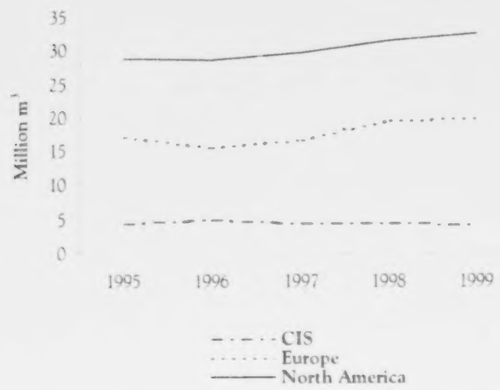
The analysis is based on the statistics received from countries in the ECE region to whom we are grateful for this critical basis for the analysis. In addition, considerable material was drawn from secondary sources, for example trade journals and websites. Lastly, personal contacts were made with country correspondents, trade associations and other experts in hardwood markets.

9.2 ECE market developments

Consumption of sawn hardwood rose by 2.2% to achieve a new record in the ECE region in 1999, with strong gains in Europe, by 3.0% and North America, by 2.7%, offsetting a 5.0% drop in the CIS (graph 9.2.1) (table 9.2.1). Trade was more active than in previous years as exports rose by 18.1% to a new height of 9.9 million m^3, of which 5.3 million was in Europe. Imports in the region rose by 7.8% to a new high of 11.4 million m^3. On much smaller volumes the CIS trade of sawn hardwoods improved for exports, rising 33.7% to reach 440,000, while imports fell by 4.5% to 107,000 m^3.

GRAPH 9.2.1

Consumption of sawn hardwood, 1995-1999



Source: ECE/FAO TIMBER database, 2000.

9.3 North American market developments

The greatest volumes of sawn hardwood in North America are used for low grade uses like pallets, crating and railroad ties. Higher value uses are mainly for furniture, with smaller shares going into mouldings and millwork, cabinets and flooring. Both high and low value uses surged in 1999 with the strong economic developments.

In the United States, where consumption rose by 2.8% to a record 31.5 million m^3, strength in all manufacturing sectors called for pallets and packaging from sawn hardwood. Production rose by 3.0%, to a third consecutive annual record of 33.9 million m^3 (table 9.3.1). Approximately 90% of the United States production is consumed domestically and in mid 2000 the domestic market was strong from both new residential construction-derived demand, as well as remodelling. Sales of flooring, cabinets, furniture, millwork and other

TABLE 9.2.1

Sawn hardwood balance in the ECE region, 1995-1999

(Million m^3)

	1995	*1996*	*1997*	*1998*	*1999*	*Timber Committee estimates for 2000**
EUROPE						
Production	13.86	12.76	12.70	13.63	14.58	14.90
Imports	6.80	6.22	7.34	8.19	8.68	8.69
Exports	3.31	3.35	3.73	4.35	5.30	5.47
Net trade	-3.49	-2.87	-3.61	-3.84	-3.38	-3.22
Apparent consumption	17.40	15.76	16.44	17.59	18.12	18.12
RUSSIAN FEDERATION						
Production	3.98	4.38	3.93	3.97	3.85	4.76
Imports	0.01	0.01	0.05	0.03	0.01	0.00
Exports	0.27	0.25	0.25	0.25	0.33	0.44
Net trade	0.26	0.24	0.20	0.22	0.32	0.44
Apparent consumption	3.71	4.14	3.73	3.75	3.53	4.32
NORTH AMERICA						
Production	30.44	30.65	31.28	32.89	33.85	33.94
Imports	1.59	1.45	2.12	2.25	2.58	2.63
Exports	3.26	3.55	3.89	3.68	4.13	4.14
Net trade	1.67	2.11	1.77	1.43	1.55	1.51
Apparent consumption	28.76	28.55	29.51	31.46	32.30	32.43

*= The Timber Committee's forecast trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

high-quality end products were strong in 1999 and 2000 (*Hardwood Review Export* as reported by www.hardwoodreview.com, 2000).

A growing share of the United States consumption is imported, some of which is tropical. In the last 4 years United States imports have tripled and in 1999 they rose by 15.5% to reach 2.6 million m^3 (table 9.3.2). However import volumes are roughly half of exports.

With extensive hardwood forests and increasing sawmill capacity and productivity, the United States is a net exporter of sawn hardwoods. Some of that wood is reprocessed overseas or in Mexico or Canada, and then it is re-imported as furniture, cabinetry or semi-finished goods. United States exports rose by 11.5% in 1999 to a level of 2.8 million m^3, but did not recover completely from the drop in 1998.

Primarily the higher grades of sawn hardwood are exported to Europe and a lower grade mix goes to Mexico and Asia. Lower grades contain fewer defect-free cuttings and thus require more processing time and labour costs. However lower-grade sawnwood is less costly and thus there is always a trade-off between labour and raw material costs.

The majority of the 1998 decline in exports was due to the Asian economic crisis. Evidently the partial recovery in main Asian export markets, like Japan, has not been fully reflected in a return to previous hardwood import levels from North America.

However volumes to China have been increasing and accounted for a 12% share of 1999 exports. The current trend is for lower grades and light coloured species such as tulipwood and basswood (*Hardwood Review*, 2000). Following the 1997/1998 crisis, United States exports to Japan stagnated at lower levels while those to China have more than doubled in volume (exports to Taiwan Province of China have been decreasing slowly over the last decade). In the first 5 months of 2000, exports of sawn hardwood to China grew dramatically, by 148% in value to reach $23.7 million and by 136% in volume to reach 56,000 m^3 (USDA Foreign Agricultural Service, 2000). For reference Canada was the primary export destination at $180.0 million and Italy was second at $50.7 million.

The main destination for the United States hardwoods is Canada with over a 35% share of the 1999 exports, up from 31% in 1997 (USDA Foreign Agricultural Service, 2000). The share to the European

TABLE 9.3.1

Production of sawn hardwood, 1996-1999

(Million m^3)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
EUROPE	12,760	12,704	13,633	14,584	951	7.0
of which :						
France	3,094	2,807	3,023	3,050	27	0.9
Turkey	1,766	1,801	1,889	1,935	46	2.4
Germany	1,144	1,048	1,165	1,559	394	33.8
Italy	900	963	900	900	0	0.0
Poland	780	900	1,080	1,120	40	3.7
Romania	769	746	744	973	229	30.8
Croatia	484	505	522	519	-3	-0.6
Slovakia	203	266	420	405	-15	-3.6
Czech Republic	305	293	327	333	6	1.8
Other countries	3,315	3,376	3,563	3,790	227	6.4
Russian Federation	4,383	3,925	3,970	3,850	-120	-3.0
Canada	1,000	835	1,027	1,051	24	2.3
United States	29,650	30,444	31,860	32,804	944	3.0
NORTH AMERICA	30,650	31,279	32,887	33,855	968	2.9

Source: ECE/FAO TIMBER database, 2000.

TABLE 9.3.2

Exports and imports of sawn hardwood, 1996-1999

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999* *Volume*	*%*
EXPORTS						
EUROPE of which:	3,346	3,726	4,352	5,302	950	21.8
France	558	576	552	571	19	3.4
Germany	304	365	446	510	64	14.3
Romania	331	325	333	423	90	27.0
Slovakia	106	195	290	381	91	31.3
Poland	228	296	297	315	18	5.9
Hungary	150	163	250	258	8	3.1
Italy	45	103	125	237	112	89.6
Austria	160	115	110	135	25	22.7
Netherlands	142	123	137	126	-11	-7.9
Slovenia	114	103	106	109	3	2.5
Other countries	1,208	1,363	1,706	2,238	532	31.2
Canada	859	1,003	1,178	1,339	161	13.6
United States	2,692	2,890	2,502	2,790	288	11.5
NORTH AMERICA	3,551	3,893	3,680	4,129	449	12.2
IMPORTS						
EUROPE of which:	6,217	7,339	8,187	8,682	496	6.1
Italy	1,576	1,760	2,021	2,120	99	4.9
Germany	553	852	775	859	84	10.8
Netherlands	583	542	605	840	235	38.8
France	535	601	600	640	40	6.6
United Kingdom	575	611	479	504	25	5.1
Portugal	144	161	187	223	36	19.1
Austria	165	192	199	218	19	9.5
Sweden	109	106	123	166	43	35.3
Other countries	1,977	2,514	3,198	3,113	-85	-2.6
Russian Federation	8	46	26	9	-17	-65.4
Canada	928	1,027	954	1,083	130	13.6
United States	518	1,096	1,295	1,496	201	15.5
NORTH AMERICA	1,446	2,123	2,249	2,579	331	14.7

Source: ECE/FAO TIMBER database, 2000.

(graph 9.3.1). In 2000, despite the strong dollar compared to the euro, exports to the larger EU imports increased both in the euro zone countries (by 17% to $51 million to Italy, by 24% to Spain, by 13% to France, by 37% to the Netherlands, by 18% to Portugal and by 56% to Ireland) and to EU countries outside the euro zone (by 17% to $43 million to the United Kingdom, by 27% to Sweden and by 42% to Greece).

United States exports to Germany in the first 5 months of 2000, the sixth most important market, were down sharply by 20% in value to $27 million (USDA Foreign Agricultural Service, 2000). Perhaps part of the decline is because of the surplus, low-cost sawnwood processed from the 1999 storm-felled timber. However German sawn hardwood imports are increasingly from central and eastern European countries (*hardwoodmarkets.com*, June 2000).

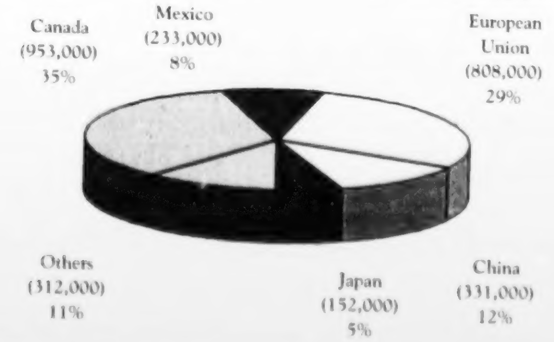
Transportation costs are climbing in 2000 due to, among other reasons, higher oil prices. If United States exporters find shipping via Canada to be advantageous, there could be increased difficulty in identifying the true origin of exports from North America and further questions about the volumes, values and trade flows. More sawnwood will be transported kiln dried due to savings of weight – 3 truckloads of dried sawnwood would have the same transport cost as 2 truckloads of green sawnwood (*Hardwood Review Export*, 2000).

Canadian consumption of sawn hardwood has been falling over the last 5 years, although the drop in 1999 was insignificant, possibly indicating an end to the trend. Canadian production and consumption were 1.1 million m^3 and 0.8 million m^3 respectively. The excess is exported, along with another approximately 1 million m^3 in transhipments from the United States.

GRAPH 9.3.1

United States sawn hardwood export destinations, 1999

(m^3)



Source: USDA Foreign Agricultural Service, 2000.

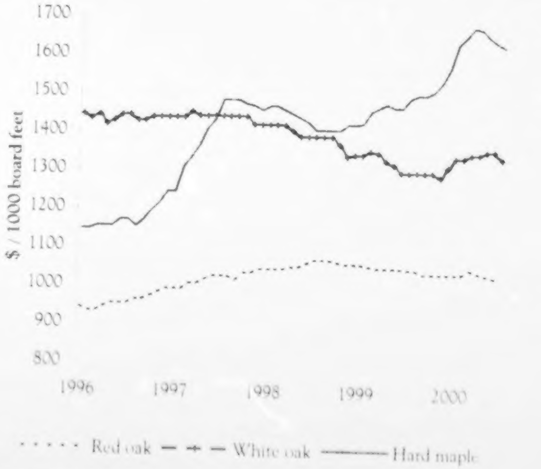
Prices of hard maple sawnwood responded to demand for furniture, cabinetry and flooring and rose strongly in the United States in 1999 (graph 9.3.2). Purchasers predominantly prefer "white" hard maple, which comes only from the sapwood. Larger diameter maples have more sapwood but are lesser in number, hence the rising prices. The 1 common grade of red oak is used in furniture, millwork, turnings, machine carvings and other uses where the longest, defect-free lengths are not needed. From a peak in 1998, the price has been generally falling, partly because new production capacity has produced more than the corresponding domestic demand.

Export markets generally take the highest grades on North American hardwoods, especially in Europe where manufacturing labour costs are high for processing sawnwood into further products. In the case of white oak, one of the most highly demanded species for the European market, the price for the FAS grade, the most defect-free grade, have been generally falling, despite a small rise in early 2000.

Prices for United States cherry climbed higher in 1999 due to the continued harvest moratorium in the Allegheny National Forest, a key source for high-quality cherry logs (*Timber & Wood Products*, 2000). In spite of the fact that growth exceeds removals by 70% in the

GRAPH 9.3.2

United States sawn hardwood prices, 1996-2000



Note: All kiln-dried, 4/4 (2.5 centimetre) thick. Red oak and hard maple are 1 common grade and white oak is the highest FAS grade.

Source: *Hardwood Review*, 2000.

United States hardwood resource, some eastern National Forests are coming under pressure to reduce harvests (American Forest and Paper Association, 2000).

In 1999 the exports of several species to Europe expanded significantly, especially ash, up 47%, hard maple, up 18%, walnut, up 44%, cherry, up 3%, and tulipwood, up 6%. In contrast, red oak shipments declined by 35% (American Hardwood Export Council, 2000). The United States also exported 58% more flooring and considerable volumes of flooring manufactured in Europe employ United States species.

9.4 European market developments

In Europe the consumption of sawn hardwood rose by 3.0% in 1999 to reach 18.1 million m^3. This is in line with the trend for the last 4 years and it was forecast by the Timber Committee to continue in 2000, although at a slower rate. At 18.1 million m^3 in 1999, consumption remains well below the levels at the beginning of the 1990s, i.e. near 22 million m^3. As in North America, residential and non residential construction was driving demand for sawnwood for mouldings and millwork, as well as furniture. The barrel industry continues to consume increasing volumes of white oak for European vinicultures as well as exports to the United States, South Africa, Australia and other wine producing countries.

Production of sawnwood rose strongly, by 7.0%, with more than half of the increase coming from Germany, which showed a 33.8% production increase from 1998, to reach 1.6 million m^3. France, the largest producer of sawn hardwoods in Europe had little increase. However with the windstorms at the end of 1999, both countries could show increased production in 2000. Based on higher export volumes in the first quarter 2000, production could be assumed to have increased.

Production also increased in a number of central and eastern European countries, among which, Croatia, Estonia, Latvia, Lithuania, Poland and Romania. Most of these countries have also reported increased furniture production and exports, primarily to western Europe. It is important to note that *apparent* consumption is not always true domestic consumption, especially where sawnwood is processed into value-added products for export, such as mouldings. Production in Turkey continued to climb, by 2.4% to reach 1.9 million m^3, a volume which ranks second in Europe behind France and ahead of Germany.

Trade in 1999 was active in Europe, although the 22% increase in exports, of which over a third was from Belgium and Luxembourg, could not be confirmed.[1] Thus the exact level should be less than reported here. Nevertheless, as only a few European countries reported fewer exports in 1999, e.g. Denmark, and most exported more, it is certain that exports increased by double digits. In the *Review* "exports" are both within Europe and to destinations outside. Many European exporters have established market share in Asia where beech is still in high demand, not only for sawnwood, but also for logs and veneer.

European imports of sawnwood rose strongly too, by 6.1%, consistent with the trend of higher apparent consumption. Italy represents almost a quarter of Europe's hardwood imports (mostly temperate, but roughly 10% was tropical) and imports rose by almost 5% to a record 2.1 million m^3. Early reports in 2000 indicate that both sawnwood and logs from storm damaged timber in France, Germany and Switzerland have been flowing heavily to Italy.

In the United Kingdom, despite greater imports in 1999, stocks were reported to be low in 2000, leading to price volatility (*Tropical Timbers*, now *hardwoodmarkets.com*, 2000). United Kingdom imports climbed 25% in 1999, to reach 504,000 m^3, but not recovering from the drop in 1998. Tropical sawnwood and roundwood imports together fell by 8% in the United Kingdom in 1999 (*Tropical Timbers*, 2000). While still small, volumes of sawn sawnwood are being imported from central and eastern European countries, some of which is being transhipped from Russia and Ukraine.

In 1999 tropical sawnwood imports rose strongly, by over 10% to reach 1.6 million m^3 in Europe, mainly in the Netherlands. Tropical timber, especially plywood, but also some species of sawnwood, has been priced lower since the Asian economic crisis. While not based on conclusive evidence, some of the increased tropical imports could stem from consumers feeling better about purchasing tropical timber since certification systems have been initiated to ensure sustainable forest management. ITTO, Comtrade and Comext report a continued rise in imports of value-added tropical products. The current fashion in Europe during the summer of 2000 is lawn and garden furniture made from tropical species such as teak.

In 2000 the demand for United States hardwoods continued to be robust due to continued recovery in Asia, sustained exports to China and "bullish" markets in Europe (*Timber & Wood Products*, July 2000). Demand for furniture (wood and non-wood) rose in the United Kingdom by 14.2% in volume and sales were up by 12.7% during the first quarter 2000 (United Kingdom statistics as reported by *TTJ*, July 2000). Domestic manufacturers were losing market share to imported furniture which increased by 47% in value and 58% in volume in the first quarter of 2000 compared to the first quarter 1999. United Kingdom furniture exports increased in value by 8% in early 2000 but decreased by 13% in volume. These changes in trade patterns can partly be explained by the relatively strong pound sterling.

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[1] Belgium and Luxembourg responded to the trade questionnaire for 1999, but not for 1998. Thus there is a possibility that the old values are not consistent with the new submission, hence the large jump in European exports. In addition the definition in the questionnaire of "non-coniferous sawnwood" changed slightly, which may also be a factor in this large jump in exports.

As in North America, one of the current, strong demands in Europe for sawn hardwood, specifically in strips or friezes, is for fabrication of wood flooring. Demand for non-allergenic flooring, due to health promotions in countries like the United Kingdom, where approximately 90% of households have some carpeting, have led to the creation of the Healthy Flooring Network (*Timber & Wood Products*, July 2000). There have been capacity increases in flooring manufacturing in Europe, along with mergers and acquisitions. All of these developments have resulted in increased production of parquet (hardwood and softwood) in Europe (graph 9.4.1). Some 86% of the wood flooring production is some form of laminated wood and 14% is solid wood (*L'Echo des Bois*, July 2000). Most of the flooring is produced in the Nordic countries, Germany, France and Italy and it is consumed in Germany, Italy, Spain, France and Austria.

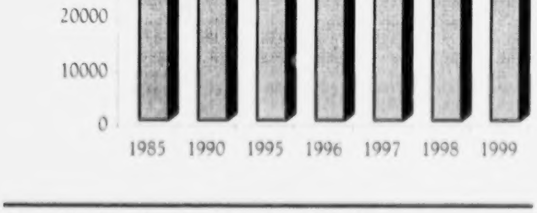
The prices of sawn hardwood in Europe show no correlation between countries when viewed on a macro level. The mix of grades included in the indices disguises the real price changes within the species. Beech sawnwood prices exhibit opposite trends in Germany and France over the past 5 years until 1999 (graph 9.4.2). However since mid 1999 the beech prices were falling in both countries and the drop accelerated in 2000.

The windstorms felled 193 million m^3 of roundwood (hardwood and softwood combined) as described in chapter 3, and the price of *sawlogs*, especially beech, fell by 30 to 40%. However there was not the same effect on sawn hardwood prices. In contrast, some sawnwood prices were rising in 2000. The only species of high-quality sawnwood showing a drop in price was beech, perhaps because of a temporary overproduction to process the sawlogs before the onset of stain (*Forêts de France* and *L'Echo des Bois*, June, 2000) (table 9.4.1).

The rise in prices for sawnwood at a potential time of oversupply due to the huge volumes of roundwood available due to the storms is due to continued strength in residential and non-residential construction in Europe. However in mid 2000 there were signs of a slowdown in residential construction as building permits and housing starts fell in France, although the non-residential construction appeared not to have weakened (*L'Echo des Bois*, June 2000).

GRAPH 9.4.1

Parquet production in Europe, 1985-1999

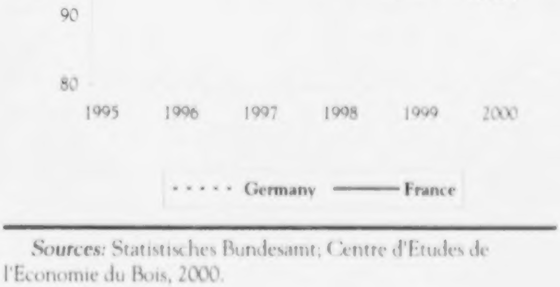


Note: Hardwood and softwood combined

Source: Fédération Européenne de l'Industrie du Parquet, 2000.

GRAPH 9.4.2

French and German beech sawnwood prices, 1995-2000



Sources: Statistisches Bundesamt; Centre d'Etudes de l'Economie du Bois, 2000.

TABLE 9.4.1

Sawn hardwood prices in France, 2000

Species	*Price range* *(French francs per m^3)*	*Change* *January to April 2000*
Oak	3175-5410	-0.4 to +2.8%
Beech	1715-2380	-3.5 to -4.6%
Poplar	1665	minor

Note: Price varies by quality and size.

Sources: *Forêts de France* and *L'Echo des Bois*, June 2000.

The Timber Committee forecast a large increase in exports in 2000, by 3.2%, supported by a 2.2% rise in production in Europe. However as these forecasts were made 3 months before the catastrophic windstorms, the sawnwood production and trade could be much higher in 2000 as suggested by early trade reports.

9.5 Russian Federation market developments

As was the case for softwood, sawn hardwood consumption fell, by 5.8%, erasing the gains made in earlier years. Of the 4.2 million m^3 consumed, most is from domestic production as imports are minor. Exports from the Russian Federation are also small, but they increased by 31.7% in 1999 to reach 440,000 m^3. The Timber Committee forecast that consumption would begin to recover in 2000, as well as production, and that exports would continue rising.

9.6 Conclusion

Markets for sawn hardwood were active in 1999 with consumption, production and trade at record levels in the ECE region as a whole, but not at highest levels in all countries. Storms felled millions of hardwood trees in France, Germany and Switzerland in December 1999 with a direct impact on roundwood but not sawnwood markets, in 2000. Trade in hardwoods was stronger than forecast in Europe in mid 2000. In North America records were set in 1999 for consumption, production and trade and in mid 2000 the early reports were for even higher volumes in 2000.

Chapter 10

Wood-based Panels – Supply, Trade and Consumption [1]

Highlights

- Overall wood-based panels consumption in Europe shows a small increase in 1999 to a new record level.
- Particle board consumption in Europe in 1999 was just above 1998 levels and reached 35.2 million m^3, a new record, thanks to the recovery of markets in the second half of the year.
- OSB in Europe is gaining market share very rapidly and consumption was up 43% to just under 1 million m^3. This trend is expected to continue as new capacity comes on stream.
- Overall fibreboard consumption in Europe was 2.8% higher in 1999, and reached 10.4 million m^3; of this amount, the increase of MDF consumption was stronger, up 10.7% to 7.1 million m^3, despite very competitive markets.
- Production of plywood in Europe was up 2.3% from 1998, as output from the main producer Finland was over 1 million m^3 for the first time. However, consumption remained near 1998 levels and markets were competitive.
- Overall wood-based panels consumption in North America reached record levels in 1999 to 55.6 million m^3, a 5.3% increase.
- In the North American structural panel sector, OSB continued its strong growth and consumption increased 10.6% in 1999. Softwood plywood consumption increased marginally, up 2.9%, due to a fall in United States exports, while North American production remained at 1998 levels.
- Overall wood-based panels consumption in the Russian Federation, was up 13% to 3.0 million m^3 in 1999, but overall consumption remains well below 1992 levels.

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10.1 Overview of wood-based panels markets

Preliminary figures of wood-based panels consumption in Europe show a small increase in 1999 to 52.1 million m^3 a new record level (table 10.1.1). However, according to the European Panel Federation (EPF), real consumption taking into account particle board stock changes, was higher due to the recovery of markets in the second half of 1999. Particle board is the main panel in Europe with over 67% of total consumption. Consumption of MDF and OSB set record levels. MDF was up 10.7% to 7.14 million m^3 and OSB increased by 43% to just under 1 million m^3.

In North America trends show a continued strong performance for the wood-based panel sector in 1999 reaching 55.6 million m^3. OSB and MDF have continued their expansion. Dr. Henry Spelter from the USDA, Forest Products Laboratory has contributed to this chapter by analyzing trends for the different panel products in North America using as a frame of reference the concept of life cycle. The analysis shows that while softwood plywood has reached maturity and is at present in a declining phase, particle board is still a mature product. OSB and MDF, on the contrary, are new products with rapid market penetration and are substituting other wood products. The secretariat thanks Dr. Spelter for his contribution.

Wood-based panels consumption in the Russian Federation, has increased to 3.0 million m^3 in 1999. Higher production levels, mostly of particle board contributed to this increase, but overall consumption remains well below 1992 levels.

TABLE 10.1.1

Apparent consumption of wood-based panels (excluding veneer sheets) in Europe, the Russian Federation and North America, 1995-1999

	1995	*1996*	*1997*	*1998*	*1999*	*% of total*	
						1995	*1999*
EUROPE							
Particle board and OSB	30.54	30.11	32.08	34.70	35.16	69.4	67.4
Plywood	6.29	5.83	6.13	6.58	6.61	14.3	12.7
Fibreboard	7.16	7.23	8.25	10.15	10.43	16.3	20.0
Total	43.99	43.17	46.46	51.44	52.19	100.0	100.0
Change on previous year							
- Volume		-0.82	3.29	4.98	0.76		
- %		-1.9	7.6	10.7	1.5		
RUSSIAN FEDERATION							
Particle board	2.05	1.43	2.30	1.71	1.98	71.6	65.2
Plywood	0.20	0.29	0.35	0.40	0.41	6.9	13.6
Fibreboard	0.62	0.43	0.64	0.59	0.64	21.6	21.2
Total	2.87	2.15	3.29	2.69	3.04	100.0	100.0
Change on previous year							
- Volume		-0.72	1.14	-0.60	0.35		
- %		-25.0	53.1	-18.2	12.9		
NORTH AMERICA							
Particle board and OSB	18.66	22.04	24.01	26.50	28.49	42.0	51.2
Plywood	18.92	18.94	18.03	18.13	18.66	42.6	33.6
Fibreboard	6.81	7.09	7.05	8.16	8.46	15.3	15.2
Total	44.39	48.07	49.09	52.79	55.61	100.0	100.0
Change on previous year							
- Volume		3.68	1.03	3.70	2.82		
- %		8.3	2.1	7.5	5.3		

Source: ECE/FAO TIMBER database, 2000.

10.2 Plywood

Dr. Spelter's contribution has been integrated to the description of wood-based panels market developments based on the statistics received by countries. The life cycle concept basically states that everything has a beginning and an end, products passing through several distinct phases. The first phase is characterized by rapid growth, where a product's sales rate exceeds that of its underlying markets. That is, it is gaining market share. This is followed by a phase of maturity, where sales increasingly reflect the twists and turns of end markets as the industry is less able to insulate itself from cycles by achieving market penetration. Finally, there is a phase of decline, where sales lag the pace of downstream markets as other products begin to penetrate the market at its expense.

In North America, western Douglas fir plywood, which traces its origins to the early 1900s but whose modern expression really began in the 1930s with the development of water-resistant adhesives, exhibited the characteristics of a growth industry back in the 1950s (graph 10.2.1). During this period, the ups and downs of housing construction, its main market, were hardly noticeable in its sales chart. By the 1960s, however, when housing slumped, so did its sales, indicating its maturity. Today it is a declining product as other commodities, first southern pine plywood and now oriented strand board, have eaten away at its markets.

Southern plywood's evolution was similar, although its initial progress was much faster, which is attributable to it being an extension of an existing industry. It too has matured, about a couple of decades later than its western counterpart, and is now exhibiting signs of decline.

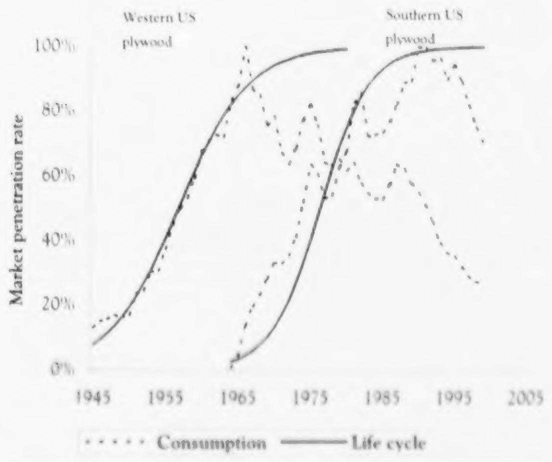
Total structural panel demand (both softwood plywood and OSB) in North America has grown at an average pace of 3% per year over the past three decades (graph 10.2.2). Underlying economic fundamentals of relatively low inflation and robust general growth support that rate of increase over the long term, although current interest rate increases portend a short term cyclical dip. Given plywood's higher costs relative to OSB, it is difficult to imagine the plywood sector claiming its share of that growth increment. Due to the forthcoming rapid increases for OSB (see below), plywood production will probably decline in the coming years. That and looming regulatory mandates to reduce factory air emissions are likely to cause older, less-efficient mills to be abandoned. Already announced closures of two mills in western United States have been attributed to these factors.

Plywood closures are likely to be less severe than the 6 million m^3 increase in new OSB capacity due to diversification into products and markets that are less vulnerable to competition from OSB. After peaking at 22.5 million cubic m^3 in 1987, plywood production in North America declined but has stabilized in recent years at 17.5 million m^3. In the next couple of years, however, around 3 million m^3 of production capacity is likely to face permanent closure due to the factors cited above.

In Europe apparent consumption of plywood declined

GRAPH 10.2.1

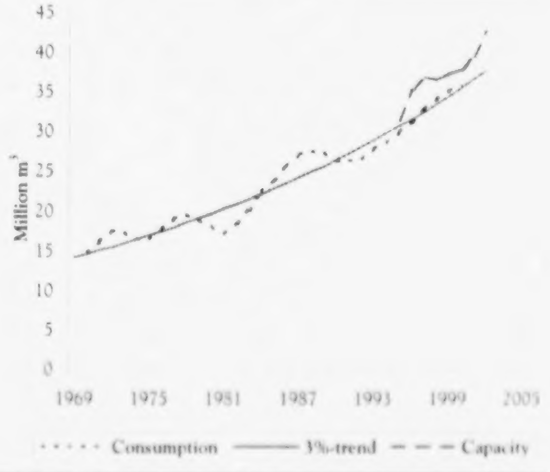
Life cycles of plywood, 1945-2000



Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

GRAPH 10.2.2

North American structural panel demand and capacity, 1969-2000

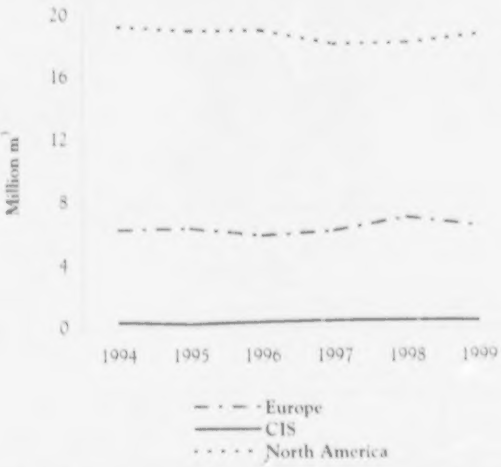


Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

slightly in 1999 due to higher export volumes outside the region (graph 10.2.3, table 10.2.1). Plywood imports to Europe incurred increased change in market share as North American plywood was substituted by cheaper Brazilian plywood. In mid 2000 the price of tropical plywood, especially from Indonesia, has fallen further. However, production increased as Finland, Europe's main producing country, set a new record level to 1.1 million m^3. The regain of activity in end use sectors towards the end of 1999 increased demand for softwood plywood and prices showed modest gains. However, according to Finland's Metsäliitto Group, European markets for birch plywood declined due to over capacity in Finland and fierce competition with exports from the Russian Federation and the Baltic countries (table 10.2.2).

GRAPH 10.2.3

Consumption of plywood, 1994-1999



Source: ECE/FAO TIMBER database, 2000.

TABLE 10.2.1

Plywood balance in Europe, the Russian Federation and North America, 1995-1999

(Million m^3)

	1995	*1996*	*1997*	*1998*	*1999*	*Timber Committee estimates for 2000 **
EUROPE						
Production	3.81	3.89	3.88	4.18	4.27	4.35
Imports	4.49	4.14	4.65	5.20	5.26	5.34
Exports	1.96	2.16	2.36	2.77	3.03	3.13
Net trade	-2.53	-1.98	-2.29	-2.43	-2.23	-2.21
Apparent consumption	6.29	5.83	6.13	6.60	6.47	6.56
RUSSIAN FEDERATION						
Production	0.45	0.67	0.88	1.10	1.32	1.47
Imports	0.01	0.01	0.03	0.03	0.01	0.00
Exports	0.26	0.38	0.56	0.74	0.91	1.03
Net trade	0.25	0.38	0.53	0.71	0.91	1.02
Apparent consumption	0.20	0.29	0.35	0.40	0.41	0.45
NORTH AMERICA						
Production	18.97	18.79	17.73	17.48	17.52	17.02
Imports	1.44	1.64	1.85	2.24	2.78	2.70
Exports	1.50	1.49	1.54	1.59	1.63	1.61
Net trade	0.06	-0.15	-0.31	-0.65	-1.15	-1.10
Apparent consumption	18.92	18.94	18.03	18.13	18.66	18.12

*= The Timber Committee's forecast trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

TABLE 10.2.2

Production and trade of Plywood, 1996-1999

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
PRODUCTION						
EUROPE	3,890	3,883	4,175	4,271	96	2.3
Finland	824	908	992	1,076	84	8.5
France	536	539	541	543	2	0.4
Italy	402	414	420	450	30	7.1
Spain	210	210	382	382	0	0.0
Germany	512	448	428	363	-65	-15.2
Poland	190	184	178	172	-6	-3.4
Austria	150	150	150	155	5	3.3
Latvia	103	120	150	155	5	3.3
Other countries	963	911	934	974	40	4.3
RUSSIAN FEDERATION	666	884	1,102	1,320	218	19.8
Canada	1,814	1,830	1,750	1,749	-1	0.0
United States	16,975	15,897	15,732	15,767	35	0.2
NORTH AMERICA	18,789	17,727	17,482	17,516	34	0.2
EXPORTS						
EUROPE	2,165	2,357	2,767	3,031	264	9.5
Finland	617	725	832	939	107	12.9
Belgium-Luxembourg	88	101	355	371	16	4.6
France	180	201	222	243	21	9.4
Other countries	1,279	1,330	1,358	1,478	120	8.8
RUSSIAN FEDERATION	382	559	736	913	177	24.0
Canada	360	557	755	952	197	26.2
United States	1,135	984	833	682	-151	-18.1
NORTH AMERICA	1,495	1,541	1,588	1,634	46	2.9
IMPORTS						
EUROPE	4,140	4,646	5,196	5,260	64	1.2
United Kingdom	965	967	969	971	2	0.2
Netherlands	260	394	528	662	134	25.4
Belgium-Luxembourg	215	313	519	539	20	3.8
Italy	295	312	378	367	-11	-2.9
France	347	353	359	365	6	1.7
Other countries	2,059	2,307	2,443	2,356	-87	-3.6
Canada	239	256	273	291	17	6.3
United States	1,406	1,592	1,964	2,489	525	26.7
NORTH AMERICA	1,645	1,848	2,237	2,780	542	24.2

Source: ECE/FAO TIMBER database, 2000.

10.3 Oriented Strand Board

Among the various sectors of the panel industry, OSB has been the most profitable in recent years. As a consequence, it continues to attract much new investment interest. Looking over the list of projects during the next few years, there are at least 16 announced new plants or expansions slated for the Americas (table 10.3.1). All told, they represent over 6 million cubic meters of additional capacity, or about a 30% increase. OSB has grown steadily over the past three decades along a path traced out by a standard sigmoid life-cycle curve (graph 10.3.1). Given this history, one has to ask, where along this curve might it be today?

The current trend of OSB is rooted in steadily growing markets and increasing market shares. But if the latter trend is topping out, as suggested by the flattening part of the life-cycle curve, then the added capacity may overshoot the market's ability to absorb the new supply. In the past, weakness in end markets was often offset by gains market share. Such is likely to happen again, but recent data show a fairly advanced state of OSB penetration in its major residential construction markets (table 10.3.2). In terms solely of plywood and OSB, a 1995 end-use survey showed a 61% : 39%, OSB to plywood split. In 1998, this changed to 68% : 32% split, indicating a strong gain. With each such gain in market share the potential for additional gains diminishes. Further, as noted above, plywood production data show product diversification into markets less prone to

TABLE 10.3.1

New OSB capacity announcements in North and South America, 2000-2002

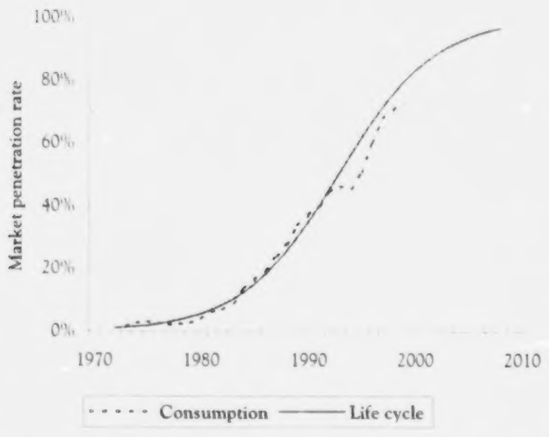
(1000 m^3)

Company	*Location*	*2000*	*2001*	*2002*	*Cumulative*
Norbord	S. Carolina	440			440
Martco (expansion)	Louisiana	55			495
Potlatch (expansion)	Minnesota	165			660
Slocan (expansion)	B. Columbia	60			720
Ainsworth	B. Columbia		360		1,080
Boise Cascade	Chile		440		1,520
Georgia Pacific	Arkansas		360		1,880
Godfrey	New York		440		2,320
Trillium	Venezuela		300		2,620
Weyerhaeuser	Saskatchewan		500		3,120
Ainsworth-Grant	Alberta		530	265	3,915
Ainsworth-Norsk	Saskatchewan			440	4,355
Chateaugay	New York			400	4,755
Louisiana Pacific	B. Columbia			500	5,225
Louisiana Pacific	Quebec			530	5,785
Norbord	Alabama			440	6,225
Total		720	2,930	2,575	6,225

Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

GRAPH 10.3.1

Life cycle of OSB, 1970-2010



Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

TABLE 10.3.2.

Structural panel residential market shares, 1995 and 1998

(%)

Segment	*Product*	*1995*	*1998*
Floor sheathing	Plywood	33	33
	OSB	28	36
	Slab	36	29
Underlayment	Plywood	13	11
	OSB	9	19
	Other	78	70
Wall sheathing	Plywood	17	13
	OSB	45	49
	Other	38	38
Roof sheathing	Plywood	35	27
	OSB	62	72
	Other	03	01

Source: Wood Products Promotion Council, 2000.

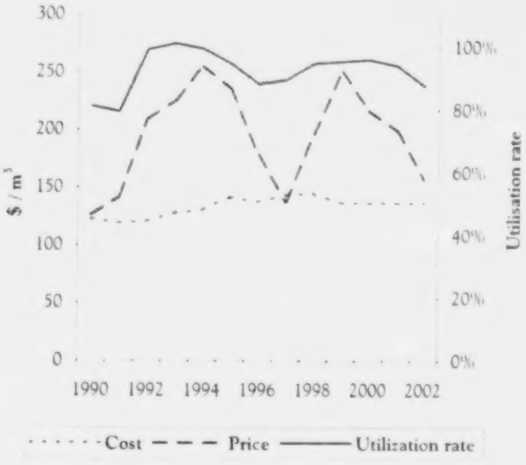
competition from OSB. Less than half of the plywood output in 1998 was sheathing, the grade most directly vulnerable to competition from OSB.

Thus, if all the planned OSB plants are realized, an extended period of weak pricing, consolidation and rationalization, involving both the plywood and the OSB sectors, is likely to follow. If the historical relationship between capacity utilization and margins is applied to the projected capacity utilization based on the plant announcements and the trend in demand, and if costs remain constant at current levels, by 2002 the price level would drop to just above \$150 per m^3, as was the case in 1997 (graph 10.3.2). The volatility of structural panels and OSB prices in North America, as a result of consolidation and rationalization in the market observed in 1998 continued in 1999 and through the first half of 2000 (graphs 10.3.3 and 10.3.4).

A further notable development in OSB is the rising European interest in it. During 1999, production increased by 43% to 968,000 m^3 (tables 10.3.3 and 10.3.5) and several price increases were successfully implemented. There are at least twelve potential new projects on tap (table 10.3.4). If all are realized, over 3 million m^3 of capacity will be looking for markets by the end of 2002. But European building methods differ from North America's and wood frame construction is relatively rare. Over a decade ago, the machinery vendor Carl Schenk AG studied the European market potential for OSB and concluded that about 1 million m^3 would be the most that would be required. This year European capacity will increase to over 1.5 million m^3 and, although Europe's panel needs are rising with some increase in the popularity of frame construction and rebuilding needs, OSB expansion is mainly attributable to new applications like flooring, packaging and decoration (EPF, 2000) (graph 10.3.5).

GRAPH 10.3.2

OSB prices and costs versus utilization rate, 1990-2002

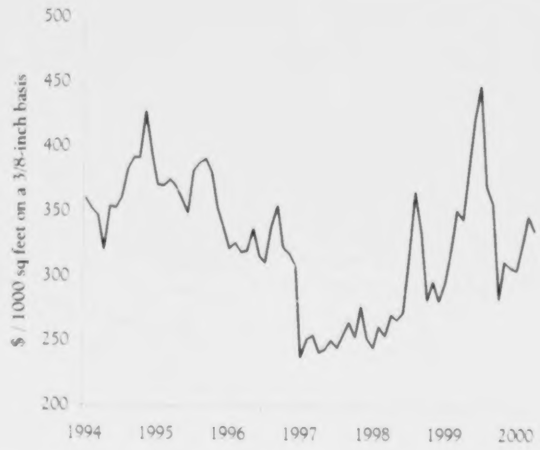


Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

However, it is questionable if a three-fold increase in European supply can be accommodated. If this is the case, North American and European exports of OSB may compete in international markets.

GRAPH 10.3.3

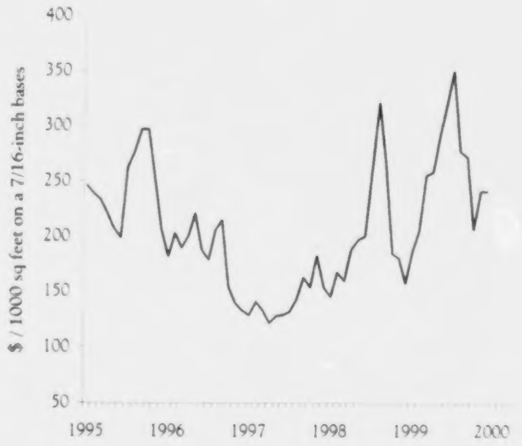
North American structural panel composite prices, 1994-2000



Source: Random Lengths Yardstick, 2000.

GRAPH 10.3.4

United States OSB prices, 1995-2000



Source: Random Lengths Yardstick, 2000.

TABLE 10.3.3

OSB balance in Europe, the Russian Federation and North America, 1995-1999

	1995	*1996*	*1997 (Million m^3)*	*1998*	*1999*	*Timber Committee estimates for 2000 **
EUROPE						
Production	0.37	0.37	0.44	0.66	0.97	1.15
Imports	1.02	0.79	0.99	1.08	1.17	1.19
Exports	0.58	0.53	0.55	0.63	0.73	0.73
Net trade	-0.54	-0.37	-0.57	-0.58	-0.44	-0.46
Apparent consumption	0.44	0.38	0.44	0.37	0.53	1.61
NORTH AMERICA						
Production	11.09	12.80	14.50	16.21	17.92	18.09
Imports	3.47	4.23	4.99	5.81	6.64	5.96
Exports	3.63	4.40	5.20	6.04	6.89	7.23
Net trade	0.16	0.17	0.21	0.23	0.25	1.27
Apparent consumption	10.93	12.62	14.30	15.98	17.67	16.81

* = The Timber Committee's forecast trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

TABLE 10.3.4

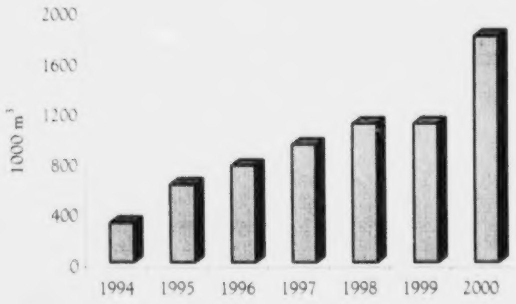
Announced OSB capacity in Europe, 2000-2002

Company	*Location*	*2000*	*2001*	*2002*	*Cumulative*
			(1,000 m^3)		
Egger	Wismar, Germany	360			360
Agglo	Genk, Belgium	300			660
Isorex (expansion)	France	100			760
Kronofrance	France	360			1,120
Kronotex	Wittstock, Germany		400		1,520
Kunz	Wittenberge, Germany		300		1,820
Pfleiderer	Neumarkt, Germany		300		2,120
Glunz	Nettgau, Germany		300		2,420
Ekoplyta	Poland		200		2,620
Kronospan	Wales, United Kingdom			300	2,920
Hornitex	Beeskow, Germany			400	3,320
Solo	Czech Republic			200	3,520
Total		1,120	1,500	900	3,520

Source: Andritz, Dieffenbacher, 2000.

GRAPH 10.3.5

OSB production capacity in Europe, 1994-2000



Source: European Panel Federation, 2000.

TABLE 10.3.5

Production and trade of OSB, 1996-1999

(1,000 m³)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
PRODUCTION						
EUROPE	373	438	663	968	305	46.0
Ireland	0	0	110	300	190	172.7
Poland	0	60	170	280	110	64.7
United Kingdom	223	223	223	223	0	0.0
Belgium-Luxembourg	150	150	150	150	0	0.0
Romania	0	5	10	15	5	50.0
Canada	3,542	4,908	6,274	7,640	1,366	21.8
United States	9,254	9,595	9,936	10,277	341	3.4
NORTH AMERICA	1,2796	14,503	16,210	17,917	1,707	10.5
EXPORTS						
EUROPE	532	545	632	730	98	15.5
Poland	0	50	170	290	120	70.7
Belgium-Luxembourg	113	125	138	150	12	8.9
United Kingdom	118	124	129	135	5	4.2
Slovenia	82	66	51	35	-16	-30.8
Slovakia	115	86	57	28	-29	-50.9
Sweden	0	0	5	16	11	204.0
Other countries	104	94	82	76	-6	-7.6
Canada	4,402	5,177	5,952	6,728	775	13.0
United States	0	19	89	159	70	78.7
NORTH AMERICA	4,402	5,196	6,041	6,887	845	14.0
IMPORTS						
EUROPE	792	994	1,075	1,169	94	8.7
Greece	297	306	316	325	9	3.0
Germany	16	108	200	292	92	46.0
Netherlands	67	82	98	113	15	15.8
Slovakia	0	17	43	69	26	60.1
United Kingdom	195	153	110	67	-43	-39.0
Austria	36	41	46	51	5	10.9
Denmark	0	114	90	49	-41	-45.6
Poland	79	64	50	35	-15	-29.6
Other countries	102	108	123	168	45	36.2
Canada	0	0	59	124	65	111.0
United States	4,230	4,991	5,752	6,513	761	13.2
NORTH AMERICA	4,230	4,991	5,811	6,637	826	14.2

Source: ECE/FAO TIMBER database, 2000.

10.4 Particle board

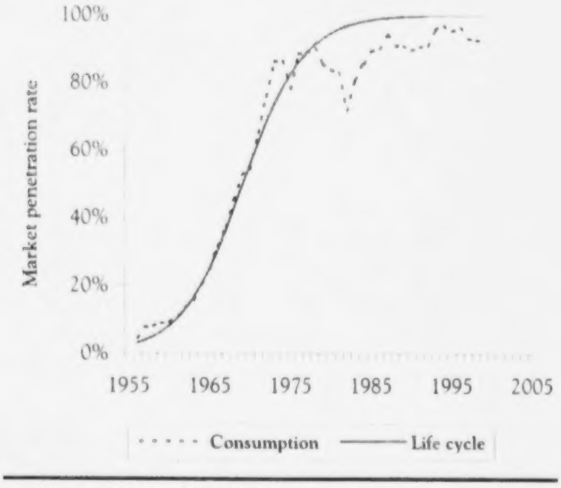
Particle board production began in the United States and Canada in the late 1940s and shows similar development along the life cycle curve (graph 10.4.1). By the mid 1970s, following almost unbroken, sometimes very rapid growth, it had reached maturity. For a while thereafter it lost market share due to concerns over formaldehyde and the rise of MDF. However, measures to reduce formaldehyde emissions and improve surface and machineability characteristics have enabled it to fend off those challenges and, unlike plywood, maintain its mature status.

The prospects for particle board can be analyzed in terms of the life cycle model (table 10.4.1). From 1961 when it attained 10% of its market share potential until 1978 when it reached 90%, its production grew at an annual rate 16.8 . From 1980 to present, its rate of growth shrunk to 2.3% a year, in line with the underlying growth of demand over the past three decades at the hypothetical saturation level of market penetration. Over the next five years, assuming the same historical trend demand growth and a slight recovery of market share, the equilibrium growth in output could be around 3%. This includes particle board made from agricultural fibres such as grass and wheat straw, an area that has seen a recent surge of interest in North America. In numerical terms, this implies an increase of 1.8 million m^3, from 1999's 10.6 million m^3 to 12.5 million m^3 by 2004 (table 10.4.2). Consumption of particle board (excluding OSB) in North America was 2.9% higher in 1999 compared to 1998 and reached 1.8 million m^3. The strong demand was the cause for particle board prices to rise steeply in 1999, 43% on average between January and December. As new capacity came on stream, supply eased and prices in early 2000 are lower than a year before, but nevertheless, higher than the depressed 1996 to 1998 level (graph 10.4.2).

The European particle board sector is bigger than its North American counterpart by about a factor of three. In 1999, its output was reported at 35.2 million m^3 (graph 10.4.3, tables 10.4.3 and 10.4.4), slightly higher than the previous year's record total. Weakness of demand in the end-use sectors during the first half of 1999 was offset by a recovery in the second half which also saw a reduction of stocks. Particle board prices were influenced by the recovery of markets and have strengthened somewhat from very depressed levels.

GRAPH 10.4.1

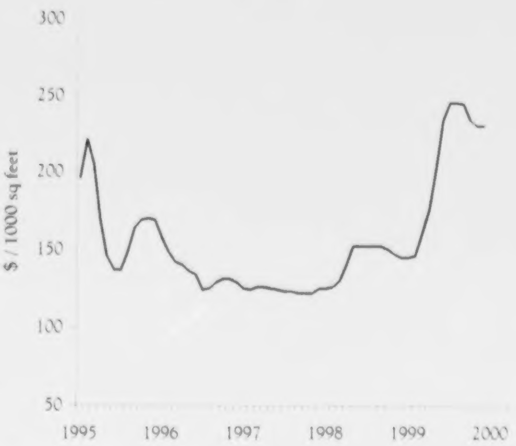
Life cycle of particle board, 1955-2000



Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

GRAPH 10.4.2

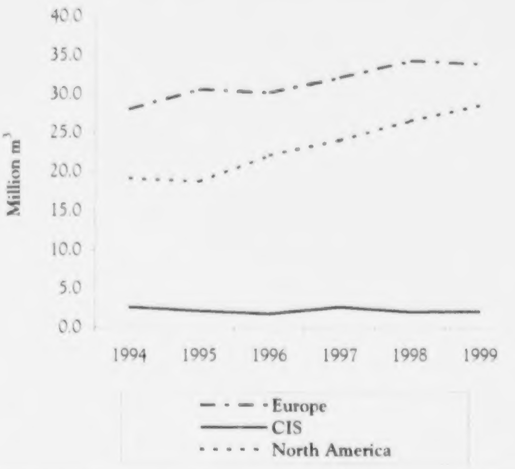
United States particle board prices, 1995-2000



Source: Random Lengths Yardstick, 2000.

GRAPH 10.4.3

Consumption of particle board, 1994-1999



Source: ECE/FAO TIMBER database, 2000.

TABLE 10.4.1

United States and Canadian particle board annual rates of growth, 1961-2004

From 10 to 90% of market potential	*From 90% market share to the present*	*Demand growth trend*	*Projected sales 5-year growth*
(1961-1978)	*(1978-1999)*	*(1969-1999)*	*(1999-2004)*
16.8%	2.3%	2.3%	3.0%

Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

TABLE 10.4.2

Particle board balance (excluding OSB) in Canada and the United States, 1998-1999

(1,000 m^3)

	1998	*1999*	*%*
CANADA			
Production	2,347	2,436	3.8
Imports	219	263	20.6
Exports	1,074	1,054	-1.9
Apparent consumption	1,491	1,645	10.3
UNITED STATES			
Productions	8,128	8,195	0.8
Imports	1,428	1,416	-0.8
Exports	524	432	-17.6
Apparent consumption	9,032	9,179	1.6

Source: ECE/FAO TIMBER database, 2000.

TABLE 10.4.3

Particle board, including OSB, balance in the ECE region, 1995-1999

(Million m^3)

	1995	*1996*	*1997*	*1998*	*1999*	*Timber Committee estimate for 2000 **
EUROPE						
Production	31.23	31.73	33.82	35.93	36.52	37.88
Imports	7.36	7.06	7.88	9.17	9.20	8.69
Exports	8.05	8.68	9.63	10.39	10.57	10.73
Net trade	0.70	1.62	1.76	1.25	1.39	2.03
Apparent consumption	30.54	30.11	32.08	34.71	35.15	35.85
RUSSIAN FEDERATION						
Production	2.21	1.47	1.49	1.57	1.97	2.45
Imports	0.02	0.05	0.98	0.24	0.10	0.09
Exports	0.17	0.10	0.16	0.10	0.09	0.11
Net trade	0.15	0.04	-0.81	-0.14	-0.01	0.01
Apparent consumption	2.05	1.43	2.30	1.71	1.98	2.43
NORTH AMERICA						
Production	19.74	22.74	24.22	26.69	28.55	29.21
Imports	3.72	4.66	6.21	7.46	8.32	7.68
Exports	4.80	5.36	6.43	7.64	8.37	9.15
Net trade	1.08	0.70	0.22	0.18	0.06	1.47
Apparent consumption	18.66	22.04	24.01	26.50	28.49	27.74

* = The Timber Committee's forecast trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

TABLE 10.4.4

Production and trade of particle board, including OSB, 1996-1999

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
PRODUCTION						
EUROPE	31,729	33,825	35,931	36,520	589	1.6
Germany	8,584	9,152	9,300	9,320	19	0.2
France	3,030	3,275	3,483	3,588	105	3.0
Italy	2,205	2,750	2,950	3,070	120	4.1
Spain	1,970	1,970	2,843	2,897	54	1.9
Poland	1,747	2,072	2,474	2,637	163	6.6
Belgium-Luxembourg	3,087	2,565	2,632	2,586	-46	-1.8
United Kingdom	2,164	2,175	2,287	2,439	152	6.6
Austria	1,700	1,771	1,800	1,800	0	0.0
Turkey	1,193	1,728	1,525	1,643	118	7.7
Portugal	695	695	748	719	-29	-3.9
Czech Republic	635	737	790	700	-90	-11.4
Sweden	577	612	650	618	-32	-4.9
Switzerland	530	501	524	525	1	0.2
Ireland	160	200	320	510	190	59.4
Other countries	3,452	3,622	3,605	3,469	-136	-3.8
RUSSIAN FEDERATION	1,472	1,490	1,568	1,969	401	25.6
Canada	6,754	7,961	8,621	10,076	1,455	16.9
United States	15,985	16,263	18,064	18,472	408	2.3
NORTH AMERICA	22,739	24,224	26,685	28,548	1,863	7.0
EXPORTS						
EUROPE	8,679	9,626	10,394	10,568	174	1.7
Belgium-Luxembourg	1,930	2,065	2,175	2,111	-64	-2.9
Germany	1,296	1,544	1,669	1,596	-73	-4.4
Austria	1,134	1,204	1,234	1,184	-50	-4.1
France	1,206	1,252	1,297	1,339	42	3.3
Poland	48	129	315	580	265	84.3
Czech Republic	312	381	405	421	16	4.0
Other countries	2,753	3,051	3,300	3,338	37	1.1
Canada	5,198	6,072	7,026	7,782	756	10.8
United States	158	353	613	591	-22	-3.6
NORTH AMERICA	5,356	6,425	7,639	8,373	734	9.6
IMPORTS						
EUROPE	7,057	7,882	9,166	9,203	37	0.4
Germany	1,559	1,630	1,794	1,522	-272	-15.2
United Kingdom	1,185	1,119	1,153	1,063	-90	-7.8
Netherlands	674	726	720	865	146	20.2
Greece	28	28	680	700	20	3.0
Italy	340	644	642	657	15	2.3
Denmark	303	450	531	640	109	20.5
Other countries	2,968	3,285	3,647	3,755	109	3.0
Canada	301	262	277	387	110	39.7
United States	4,359	5,948	7,180	7,929	749	10.4
NORTH AMERICA	4,660	6,210	7,457	8,316	859	11.5

Source: ECE/FAO TIMBER database, 2000.

10.5 Fibreboard

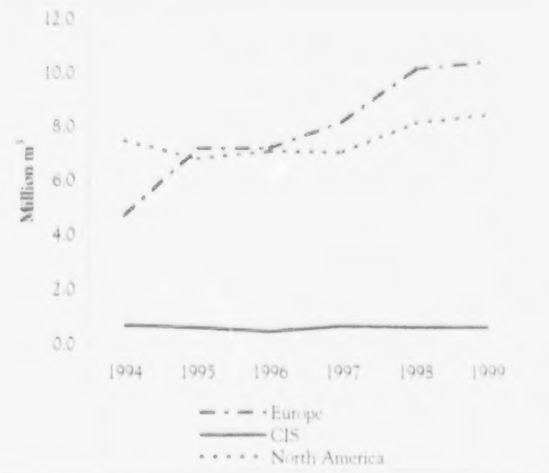
Overall fibreboard consumption increased in 1999 compared to 1998 in both North America and Europe (graph 10.5.1 and tables 10.5.1 and 10.5.2). The increase was 3.7% in North America to 8.5 million m^3, and in Europe 2.8% to 10.4 million m^3. This result is due to MDF which continues to gain market share at a rapid pace, while dry process fibreboards show small year-to-year changes or are regressing. The individual sections below consider more detailed market developments for MDF, hardboard and insulating board.

10.6 Medium Density Fibreboard

In the United States production of MDF began in the mid 1960s. It is a refined, premium composite with a more uniform cross section as compared to particle board. Its use is prominent in furniture and cabinetry where edge profiling is needed. Where only a flat corestock with an unexposed edge is required, the less costly particle board is often adequate. So MDF has substituted for some particle

GRAPH 10.5.1

Consumption of fibreboard, 1994-1999



Source: ECE/FAO TIMBER database, 2000.

TABLE 10.5.1

Fibreboard balance in Europe, the Russian Federation and North America, 1995-1999

(Million m^3)

	1995	*1996*	*1997*	*1998*	*1999*	*Timber Committee estimate for 2000 **
EUROPE						
Production	7.51	7.52	8.75	10.36	10.85	11.31
Imports	2.81	3.35	4.50	5.29	5.54	5.45
Exports	3.11	3.57	4.69	5.17	5.44	5.61
Net trade	0.42	0.23	0.21	-0.10	0.02	0.16
Apparent consumption	7.16	7.23	8.25	10.15	10.43	11.15
RUSSIAN FEDERATION						
Production	0.75	0.59	0.75	0.62	0.77	0.86
Imports	0.01	0.02	0.06	0.15	0.13	0.14
Exports	0.13	0.17	0.17	0.17	0.26	0.29
Net trade	0.13	0.16	0.11	0.03	0.13	0.15
Apparent consumption	0.62	0.43	0.64	0.59	0.64	0.71
NORTH AMERICA						
Production	7.23	7.31	7.32	8.24	8.43	8.53
Imports	0.68	0.89	1.08	1.24	1.65	1.67
Exports	1.09	1.12	1.34	1.33	1.62	1.75
Net trade	0.41	0.22	0.27	0.09	-0.03	0.08
Apparent consumption	6.81	7.09	7.05	8.16	8.46	8.45

* The Timber Committee's estimated trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

TABLE 10.5.2

Production and trade of fibreboard, 1996-1999
($1,000 m^3$)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
PRODUCTION						
EUROPE						
Hardboard	2,276	2,457	2,897	2,680	-217	-7.5
MDF	4,348	5,514	6,619	7,299	680	10.3
Insulating board	892	774	847	883	36	4.2
Total Fibreboard	7,516	8,745	10,364	10,862	499	4.8
of which :						
Germany	900	1,895	1,985	2,506	521	26.2
Italy	1,500	1,300	1,450	1,260	-190	-13.1
Spain	590	590	1,140	1,135	-5	-0.4
Poland	653	733	975	1,060	85	8.7
France	512	540	801	873	71	8.9
Other countries	3,361	3,687	4,012	4,029	17	0.4
Russian Federation	589	749	618	771	153	24.8
Canada	894	1,056	1,245	1,454	209	16.8
United States	6,415	6,262	7,000	6,977	-23	-0.3
NORTH AMERICA	7,309	7,318	8,245	8,431	186	2.3
EXPORTS						
EUROPE	3,574	4,685	5,168	5,438	270	5.2
Germany	522	770	1,017	1,149	132	13.0
France	466	538	527	673	146	27.7
Italy	395	574	483	472	-11	-2.3
Poland	293	332	454	455	1	0.3
Spain	290	289	237	256	19	8.0
Other countries	1,608	2,183	2,450	2,433	-17	-0.7
Russian Federation	173	174	173	255	82	47.4
Canada	497	744	883	1,146	263	29.8
United States	618	600	448	469	21	4.7
NORTH AMERICA	1,115	1,344	1,331	1,615	284	21.4
IMPORTS						
EUROPE	3,351	4,499	5,285	5,536	251	4.7
United Kingdom	599	755	891	772	-119	-13.3
Netherlands	304	457	537	604	67	12.5
Germany	497	561	675	603	-72	-10.7
France	181	275	365	461	96	26.2
Other countries	1,770	2,451	2,817	3,096	279	9.9
Canada	218	211	212	251	38	18.1
United States	675	867	1,032	1,395	363	35.2
NORTH AMERICA	893	1,078	1,244	1,646	401	32.3

Source: ECE/FAO TIMBER database, 2000.

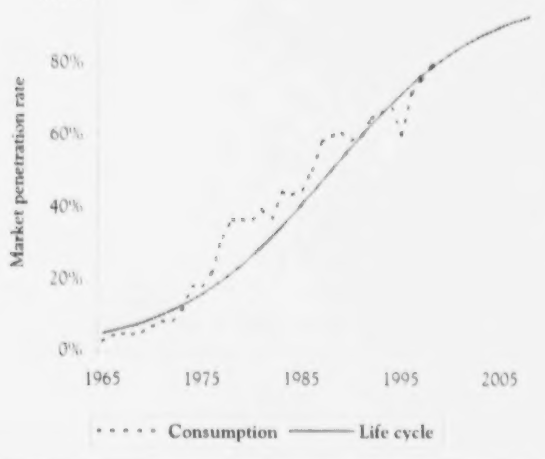
board as well as for solid wood in the middle price range of the market. It is arguably still a growth industry, so its position on its life cycle curve is a matter of some uncertainty, but in general it appears well advanced and capacity stands at over 4.5 million m^3 (graph 10.6.1).

Over the last five years seven new plants were brought into production in North America creating an additional 1.9 million m^3 of capacity. The market absorbed this two-thirds increase with some difficulty. Profit margins weakened as prices fell by about a quarter. The year 1999 however, could be characterized as one of consolidation in which markets adjusted to and absorbed the new supply in Canada, where production rose by 25.4% to just under 900,000 m^3. Canadian exports to the United States were up 40% to 222,000 m^3 and North American consumption reached 3.4 million m^3 in 1999, a 7.3% increase (table 10.6.1). Prices stabilized and recovered some, though not all, of the lost ground.

From 1965 when MDF attained 10% of its market share potential to present, its annual rate of growth averaged 10.6% (table 10.6.2). Its estimated market penetration level is now about 80%. The underlying demand growth at its hypothetical full penetration level over the last three decades was just under 3% per year. Extrapolation of the life cycle curve suggests that by 2004 it could advance to 89%. That, in combination with continuation of demand growth at the trend level, would imply a growth rate in production of about 6% per year. If such growth materializes, however, it is likely to occur toward the outer end of the period as recent capacity growth and potential cyclical weakness in markets due to rising interest rates will likely postpone new construction plans.

GRAPH 10.6.1

Life cycle of MDF, 1960-2005



Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

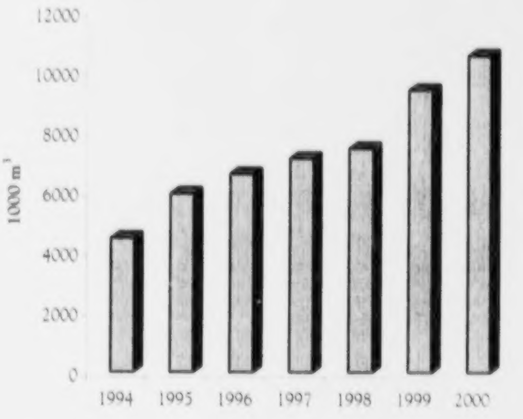
Though having started later, Europe's MDF industry has surpassed North America in production volume (graph 10.6.2). In 1999, production was reported at 7.3 million m^3, 10.3% higher than the prior year's volume. With several projects nearing completion, European MDF production is likely to continue on its more rapid growth track in 2000 as well.

Demand in Europe has not followed at the same pace the rapid production growth of MDF and prices have been under pressure. There was a sharp fall of all MDF prices towards the end of 1999. Several price increases have taken place in the first months of 2000, partly due to higher costs of glues and resins.

MDF is still a new product in the Russian Federation, production in 1999 reached 135,000 m^3 a 68% increase from the previous year.

GRAPH 10.6.2

MDF production capacity in Europe, 1994-2000



Source: European Panel Federation, 2000.

TABLE 10.6.2

North American MDF annual rates of growth, 1973-2004

From 10% market share to the present	*Demand growth trend*	*Projected sales 5-year growth*
(1973-1999)	*(1969-1999)*	*(1999-2004)*
10.6%	2.9%	6.0%

Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

TABLE 10.6.1

Production and trade of MDF, 1996-1999

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
PRODUCTION						
EUROPE	4,348	5,514	6,619	7,299	680	10.3
of which:						
Germany	710	1,495	1,566	2,032	466	29.8
Spain	490	490	969	962	-7	-0.8
France	363	416	636	698	61	9.6
Italy	700	600	650	650	0	0.0
Poland	196	246	500	612	112	22.4
Belgium-Luxembourg	440	461	483	504	22	4.5
Other countries	1,449	1,806	1,815	1,842	27	1.5
Russian Federation	0	84	80	135	55	68.8
Canada	215	289	712	893	181	25.4
United States	2,057	2,402	2,480	2,501	21	0.8
NORTH AMERICA	2,272	2,691	3,192	3,394	202	6.3
EXPORTS						
EUROPE	1,840	2,540	2,794	2,928	134	4.8
of which:						
Germany	300	434	513	533	20	3.9
France	316	354	328	509	181	55.3
Belgium-Luxembourg	14	205	395	395	0	0.0
Italy	286	435	342	327	-15	-4.4
Other countries	924	1,112	1,216	1,164	-52	-4.3
Russian Federation	0	0	0	0		
Canada	157	338	552	774	222	40.1
United States	114	128	171	189	18	10.5
NORTH AMERICA	271	466	723	963	240	33.1
IMPORTS						
EUROPE	1,555	2,277	2,621	2,764	143	5.5
of which:						
United Kingdom	337	462	572	496	-75	-13.2
Netherlands	172	228	313	351	38	12.1
Spain	172	297	230	326	96	41.6
France	90	169	209	321	113	53.9
Other countries	784	1,121	1,297	1,269	-28	-2.1
Russian Federation	0	64	54	40	-14	-25.9
Canada	112	95	92	113	21	23.2
United States	206	373	612	860	248	40.5
NORTH AMERICA	318	468	704	973	269	38.3

Source: ECE/FAO TIMBER database, 2000.

10.7 Hardboard

European consumption of hardboard fell in 1999 by 9.5% to 2.9 million m^3. Production in Italy, the main producer was down 23.8% to 610,000 m^3 (table 10.7.1). Hardboard is loosing market share to thin MDF but has been successful in maintaining the door market. During 1999 prices continued to fall, but some recovery has taken place in 2000.

In North America consumption of hardboard showed little change in 1999 from the previous year, it was 2% higher and reached 1.4 million m^3. Consumption in the Russian Federation also showed a small increase of 3.2% to 457,000 m^3.

TABLE 10.7.1

Production and trade of hardboard, 1996-1999

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
PRODUCTION						
EUROPE	2,276	2,457	2,897	2,680	-217	-7.5
of which:						
Italy	800	700	800	610	-190	-23.8
Germany	140	295	309	336	27	8.7
Poland	285	310	289	249	-40	-13.8
Other countries	1,051	1,152	1,499	1,485	-14	-0.9
Russian Federation	570	601	525	623	98	18.7
Canada	254	342	108	136	28	25.7
United States	1,558	1,328	1,269	1,225	-44	-3.5
NORTH AMERICA	1,812	1,670	1,377	1,361	-16	-1.2
EXPORTS						
EUROPE	1,107	1,335	1,563	1,649	85	5.5
of which:						
Germany	179	283	453	557	104	23.0
Poland	67	96	105	160	55	53.0
Estonia	140	129	170	157	-13	-7.4
Other countries	721	827	836	774	-62	-7.4
Russian Federation	173	174	173	255	82	47.4
Canada	213	276	221	244	22	10.1
United States	419	390	155	158	3	1.9
NORTH AMERICA	632	666	376	402	25	6.8
IMPORTS						
EUROPE	1,218	1,400	1,841	1,841	1	0.0
of which:						
Denmark	100	141	133	232	99	74.4
Germany	208	215	279	221	-58	-20.8
Belgium-Luxembourg	115	73	99	151	52	51.9
Other countries	795	971	1,329	1,238	-92	-6.9
Russian Federation	16	0	91	89	-2	-2.7
Canada	70	74	78	72	-6	-7.5
United States	349	385	263	339	76	28.9
NORTH AMERICA	419	459	341	411	70	20.6

Source: ECE/FAO TIMBER database, 2000.

10.8 Insulating board

Consumption of insulating board in Europe rose by 10.7% to 953,000 m^3 (table 10.8.1). In North America consumption in 1999 was around the previous year level and reached 3.7 million m^3.

TABLE 10.8.1

Production and trade of insulating board, 1996-1999

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
PRODUCTION						
EUROPE	892	774	847	883	36	4.2
of which:						
Poland	172	177	186	199	13	7.0
Germany	50	105	110	138	28	25.0
Switzerland	110	115	110	120	10	9.1
Other countries	452	274	335	334	-1	-0.4
Russian Federation	19	64	13	13	0	0.0
Canada	425	425	425	425	0	0.0
United States	2,800	2,532	3,251	3,251	0	0.0
NORTH AMERICA	3,225	2,957	3,676	3,676	0	0.0
EXPORTS						
EUROPE	628	811	810	861	51	6.3
of which:						
Poland	111	132	138	155	17	12.6
Switzerland	56	75	116	129	13	10.8
Other countries	268	328	298	285	-13	-4.3
Canada	127	130	110	129	19	17.5
United States	85	82	122	122	0	0.0
NORTH AMERICA	212	212	232	251	19	8.3
IMPORTS						
EUROPE	578	822	824	931	107	13.0
of which:						
Netherlands	55	151	142	179	37	26.1
Germany	132	126	126	136	10	7.9
United Kingdom	92	95	128	135	7	5.4
Italy	130	71	77	128	51	66.2
Other countries	169	379	351	353	2	0.6
Canada	36	42	42	65	23	54.4
United States	120	109	157	196	39	24.8
NORTH AMERICA	156	151	199	261	62	31.1

Source: ECE/FAO TIMBER database, 2000.

Chapter 11

Engineered Wood Products – Production, Trade, Consumption and Outlook [1]

Highlights

- Engineered Wood Products (EWPs) manufacture and use is expanding globally. Glued laminated timbers are being employed worldwide, while structural wood I-beams and LVL are primarily a North American phenomenon. However, LVL use is rapidly gaining popularity in Asian markets.
- Two key forces driving North American demand are prevalence of wood-frame construction and the changing nature of softwood fibre supply.
- North American I-beam production grew 27% in 1999 while North American LVL production grew 21%. EWPs now constitute more than 5% of North American softwood dimension lumber[2] (sawnwood) supply.
- EWPs in North America, Japan, and the Nordic countries are consumed primarily in structural applications in residential markets. In continental Europe, both structural and nonstructural applications drive demand in both residential and commercial markets.
- EWPs demand in Europe and Japan is also growing with greatest potential in Japan as the Japanese industry increasingly adopts these products in the traditional post and beam housing sector.
- Trade in EWPs is small compared with that of other wood products, but as a percentage of their production, the volume of trade is significant. North America, Japan, and Europe consume most of their own production in residential construction end uses. The largest trade flow is of glulam – primarily from North America and Europe to Japan.
- The outlook for EWPs is excellent with much of the impetus coming from the global need for efficient construction techniques, growing environmental concerns, and the universal requirement for affordable shelter.

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[2] Softwood dimension lumber is sawnwood produced to standard sizes for construction purposes.

Secretariat note

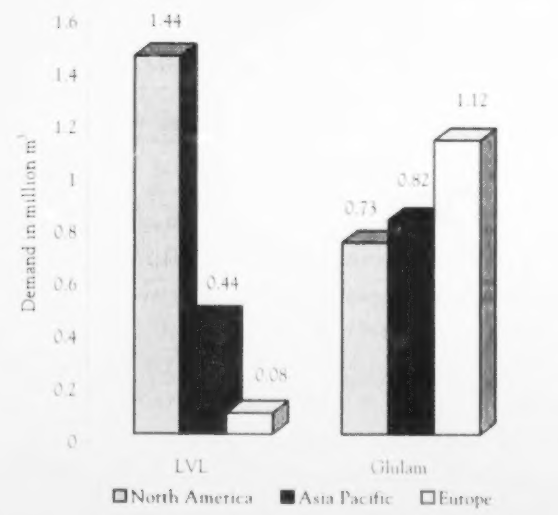
This special chapter highlights an exciting growth market for forest products. EWPs are reconstituted flakes, fibres and veneers which produce products with uniform strength properties to fulfil new demands for wood products and replace some traditional uses.

The secretariat expresses its gratitude to the principal authors, Dr. Al Schuler and Mr. Craig Adair.

Dr. Schuler spent ten years as Manager of Economics and Market Research for Norbord Industries, a major North American producer of OSB and other solid wood products. He is now a Research Economist with the North East Forest Experiment Station of the USDA Forest Service. Mr. Adair has twenty-nine years of experience in the forest products industry with the past eleven years as Director of Market Research for The Engineered Wood Association (APA). Information for this chapter came from a variety of sources with APA providing the bulk of production and trade statistics. Mr. Ed Elias, Director, International Marketing Division, APA, supplied much of the international statistics. The APA information was supplemented by Jaakko Poyry Consulting or data provided by Mr. David Giroux, Vice President, Business Strategies, and data extracted from Dr. O'Carroll's report (Pullman Particleboard Symposium, April 2000) entitled "LVL and Engineered Wood Products Business in Europe". Although reasonably good statistics on production by country are available, there are less data on international trade flows. The main problem seems to be lack of tariff classifications for I-Joists and LVL trade. The authors relied on extensive experience in EWPs to analyse current and future trends in EWPs.

GRAPH 11.1.1

Regional markets for glulam and LVL, 1999



Sources: APA, 2000; Japan Customs Bureau, 2000 and Jaakko Pöyry, 2000.

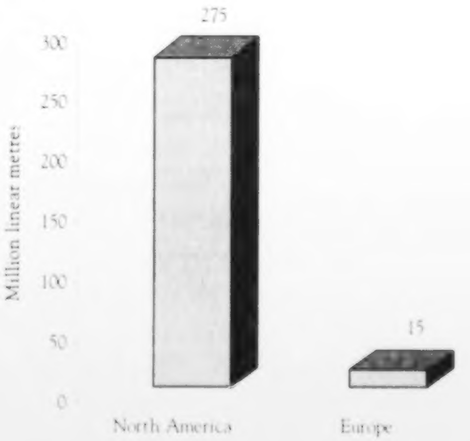
11.1 Introduction

For the purposes of this report, we will define engineered wood products (EWPs) as primarily those products used as substitutes for conventional softwood dimension lumber in markets where structural applications predominate. In current literature, these engineered wood product materials are often designated as "engineered lumber products", and include laminated veneer lumber (LVL), structural wood I-Beams, glued laminated timber (glulam), machine stress rated (MSR) lumber, finger jointed (FJ) lumber, and proprietary products such as parallel strand lumber (PSL) (Parallam™) and oriented strand lumber (OSL) (Timberstrand™). "Lumber" is sawnwood boards. (See box of definitions and abbreviations.) The majority of the statistics found in this report will focus on the three EWP that dominate worldwide production capacity - LVL, I-beams, and glulams. We should also mention that many researchers include oriented strand board (OSB), medium density fibreboard (MDF), and particle board in the EWPs category, however, these and other panels products are covered in another chapter of the Market Review.

On a total volume basis, EWPs are primarily a North American phenomenon. Graphs 11.1.1 and 11.1.2 present the regional market comparisons for glulam, LVL,

GRAPH 11.1.2

I-beam production in North America and Europe, 1999

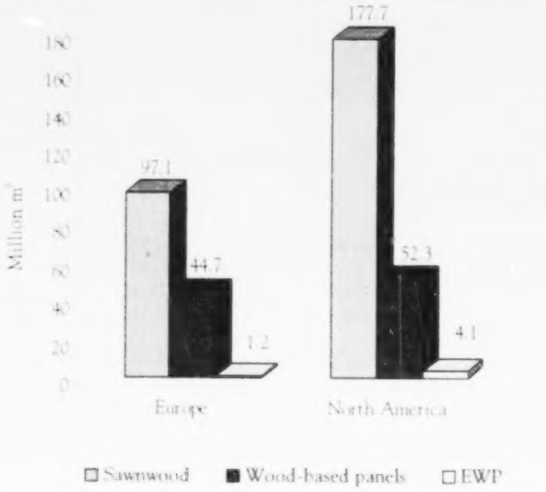


Sources: APA, 2000; and Jaakko Pöyry, 2000.

and structural wood I- beams. The glulam statistics for the Asia Pacific region are really only for Japan. EWPs are growing quickly in consumption in the ECE region, especially in North America and Europe, although they are currently a small market compared to sawnwood and wood-based panels (graph 11.1.3).

GRAPH 11.1.3

Consumption of sawnwood, wood-based panels and EWPs in Europe and North America, 1998



Note: EWP includes: Glulam, LVL and I-Beams.

Sources: APA, 2000; Jaakko Poyry, 1999; and TIMBER database, 2000.

11.2 Current market situation

11.2.1 North America.

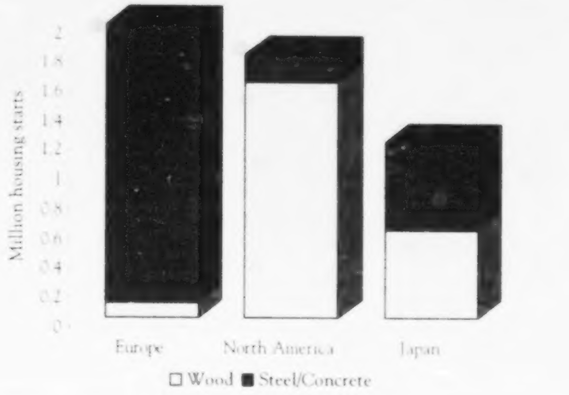
There are two key forces driving demand for EWPs in North America: the prevalence of wood frame construction (graph 11.2.1); and the changing nature of the softwood fibre supply (graph 11.2.2).

North American production has grown rapidly during the 1990s and currently constitutes 5% of North American softwood dimension/structural lumber (sawnwood) consumption. The level of housing starts and the fact that 90% of the homes built in North America are wood frame, dominate engineered wood product use in North America. European housing, by contrast, is only 10% wood based and 90% steel/concrete. In Japan, housing is about 50% wood-based and 50% steel or steel and concrete.

Conversely, the performance properties and good value of EWPs make wood-frame housing attractive. Furthermore, the North American population is aging, and this appears to be encouraging builders to switch to labour saving materials and construction techniques, many of which involve EWPs. The wood products industry wants to hold onto its most important market – residential construction – and it believes that modern EWPs will help fend off non wood building materials such as steel and concrete. Additionally, EWPs should provide wood building materials a better chance at penetrating non-residential construction markets which are currently using primarily steel and concrete.

GRAPH 11.2.1

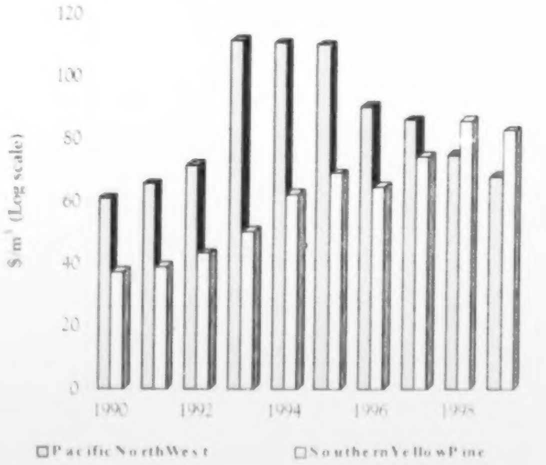
Wood frame construction



Sources: APA 2000; Japan Customs Bureau, 2000 and Jaakko Poyry, 2000.

GRAPH 11.2.2

Regional fibre cost (sawlog stumpage), 1990-1999

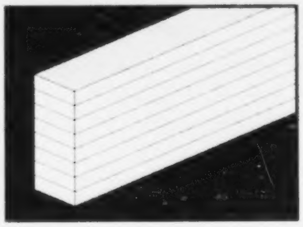


Source: Resource Information Systems (*Wood Products Review*, 2000).

Glossary of Engineered Wood Products

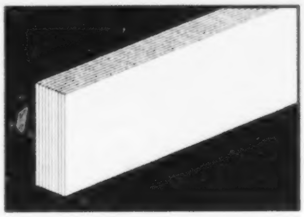
APA classifies glued engineered wood products into three general groups: 1) glued laminated timber (glulam), 2) structural composite lumber (SCL) consisting primarily of laminated veneer lumber (LVL), but also parallel strand lumber and oriented strand lumber, and 3) wood I-beams.

Glued Laminated Timber (Glulam)



Glulam is an engineered stress-rated product created by adhesively bonding together individual pieces of lumber having a thickness of 50 mm (2 inches) or less. It's one of the most versatile of the engineered wood products. It can be easily shaped into forms ranging from straight beams to complex curved members and is used for a wide variety of structural applications in both residential and non-residential construction. Glulam is used typically for headers, girders, purlins, beams, arches, and in exposed applications such as bridges, marinas and transmission structures.

Structural-composite lumber

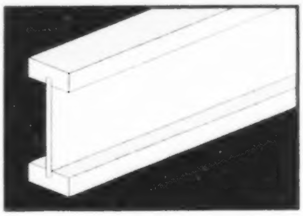


Laminated Veneer Lumber (LVL): LVL is the most widely used of the structural composite lumber products. It is produced by adhesively bonding thin wood veneers together in a large billet so that the grain of all veneers is parallel to the long direction. The LVL billet is then sawn to desired dimensions depending on the construction application. Some of the many uses are in header and beam applications, hip and valley rafters, as scaffold planking and as flange material for wood I-beams.

Parallel Strand Lumber (PSL): PSL consists of long veneer strands laid in parallel formation and bonded together with an adhesive to form beams. Like LVL and glulam, this product is used for beam and header applications where high bending strength is needed.

Oriented Strand Lumber (OSL): Similar to PSL, oriented strand lumber is made from flaked wood strands that have a high length-to-thickness ratio. Combined with an adhesive, the strands are oriented and formed into a large mat or billet and pressed. OSL is used in a variety of applications from studs to millwork components.

Wood I-Beams



Wood I-beams are structural, load-carrying products designed mostly for floor joist applications and are sometimes called I-joists. The beams offer long length and low material weight. Their "I" configuration provides high strength and stiffness. The flange material for I-beams is typically dimension lumber or LVL; the web material is typically oriented strand board (OSB) or plywood. Wood I-beams, used extensively in residential construction, continue to be the fastest growing of the glued engineered wood products.

Machine stress-rated lumber (MSR)

MSR is visually graded lumber that has been stress rated by machine for its modulus of elasticity and fibre bending strength. In addition, more stringent visual grading standards are applied, e.g. less wane than visually graded lumber.

Finger-jointed lumber (FJ)

FJ lumber is short pieces of lumber, finger jointed end-to-end to produce long boards.

Lumber prices and price volatility increased substantially in the 1990s as the wood products industry struggled with a dramatic reduction in availability of old growth softwood fibre from public timber supplies in western United States and Canada as well as exceptionally strong demand over a long period. For example, between 1989 and 1998, softwood timber supplies from Washington and Oregon fell 50% as court orders severely restricted harvest on Federal lands. These two states, accounted for more than half the softwood fibre in the Pacific Northwest, and an even larger percentage of "old growth". Sawn softwood production in the Western Region (Pacific Northwest, Inland Empire[3], and Northern California) fell 35% from the historical peak of 56 million m^3 in 1987 to 36.8 million m^3 in 1995. The changes in the availability of public timber were mandated in part by a shift in public attitudes toward "old growth management", and this in turn changed the nature of future softwood harvest in two important ways: harvests from private lands now constitute almost 75% of the softwood harvest in the Pacific Northwest, and the majority of the private inventory is 2nd and 3rd growth as compared to "old growth" on public lands. The sawnwood produced from the smaller diameter trees from the 2nd and 3rd growth forest has more juvenile wood and more knots. Sawnwood produced from the "younger forest" generally has diminished strength properties and reduced in-service performance.

During this same period, performance-based building codes[4] were adopted, and rapid advances were being made in resin technology. These events helped the EWPs industry to tap into vast volumes of underutilized, fast growing, relatively inexpensive fibre. Although the bulk of the available volume is in the form of low density hardwoods, softwood thinnings make additional low cost fibre available. Furthermore, new conversion technology (e.g. flaking machines, press technology and drying systems) allowed the industry to transform what were formerly "weed species" such as aspen, birch, red maple and sweetgum, into EWPs with superior performance properties.

As production capacity moved from the Pacific Northwest to the South, pressure was put on the softwood fibre resulting in higher sawlog costs and loss of competitive advantage. Southern yellow pine fibre, as noted in graph 11.2.2, is now more expensive than softwood in the Pacific Northwest according to recent reports from Resource Information Systems (*Wood Products Review*, 2000).

EWPs have two major efficiency-related advantages that should enhance their continued growth in residential and non-residential applications. (1) mechanical (uniform strength) properties that enhance design values and enable more efficient installation; and (2) more efficient conversion technology which results in higher final product yield from the resource. Final product yield from sawmilling averages 40% from the log with bark, while yields of LVL are 52%; Parallam™ about 65% (Truss Joist Macmillan, 1999); and Timberstrand™ about 75% (Truss Joist Macmillan Annual Report, 1999). Furthermore, EWP prices have remained relatively stable – a factor favoured by large builders who pre-sell many of their homes.

Cost savings for EWPs are often measured in terms of labour savings. For example, installing one LVL beam for a garage door header takes less time than the conventional method of nailing two 2x10s together to form the equivalent (table 11.2.1). Another example is where a traditional wood floor system takes 133 pieces of lumber while an I-beam floor has only 80, hence less labour.

In most cases EWPs cost more per linear foot than conventional materials, but they save labour and are stronger. In the example above, the "installed" cost of a I-joist floor system is comparable to a traditional 2x10 system. Hence, EWPs are often a better value.

There is currently a skilled-labour shortage in the North American building construction industry resulting from a combination of tight labour markets (the unemployment rate has fallen to 4%, a 30-year low) and demographics. Recent demographic studies suggest the problem will get worse in the new millennium as the North American population ages. Not only are fewer young people (roughly 20 to 35 years old) working in construction, but less young people are seeking jobs in construction (*Engineered Wood Journal*, 2000). These trends are forcing builders to adapt labour-saving building techniques including various forms of manufactured housing such as modular (manufactured in 2 to 6 modules in a factory), mobile homes, and panelized housing, (panels manufactured in a factory), (*Automated Builder*, 2000) (graph 11.2.3). Stick-built (sometimes referred to as "site-built") housing now constitutes less than 1/3 of United States housing starts (*Automated Builder*, 2000). In addition, shipments by the lumber components industry (roof and floor trusses, and wall panels) have increased from 1.5 billion dollars in 1992 to an expected $3 billion by 2002.

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[3] The Inland Empire of the western United States includes eastern Washington, eastern Oregon, Idaho, Montana, Colorado, Arizona, Utah and New Mexico.

[4] I.e. building codes which instead of specifying materials or production methods define performance standards to be achieved. This avoids distortion and does not discriminate against new processes. An example is when old codes specified plywood where a new performance-based code specified load bearing and other engineering performance requirements.

For the above reasons, EWP demand grew rapidly in North America during the 1990s as described below in graph 11.2.4. LVL is used mostly in North America as flange material for I-beams (60%) with the remainder being used primarily in structural beam applications including garage door headers, purlins, supporting beams, and the like. I-beams are used primarily in floor joist and roof rafter applications in North American platform frame construction.

11.2.2 Europe

In Europe, glulam is the dominant EWP. Glulam is used primarily as load bearing structural members in commercial and industrial applications. These applications take the form of beams, arches, and columns, typically with a rectangular cross section.

According to Jaakko Poyry research, glulam makes up almost 95% of Europe's consumption of EWPs. Europe not only consumes large quantities, but is also a major exporter, with the bulk of the exports going to Japan.

TABLE 11.2.1

Examples of efficient applications using EWPs

Applications	*Conventional solution*	*EWP Solution*
Garage door headers [1]	Two 2x10s [2] nailed together	One LVL beam
Floor system	Conventional floor with 133 pieces	I-Joist system with 80 pieces (40% less)
Carrying beams [3]	Three or four 2x12s nailed together One steel I-Beam	One 3½" LVL beam, One Parallam beam
Roof truss	Metal plate wood truss with conventional lumber chords [4]	Metal plate wood truss with MSR chords (25% less lumber)

[1] Headers span door and window openings to distribute the load from above.

[2] "2x10s" are softwood lumber measuring nominally 2 inches by 10 inches in cross section.

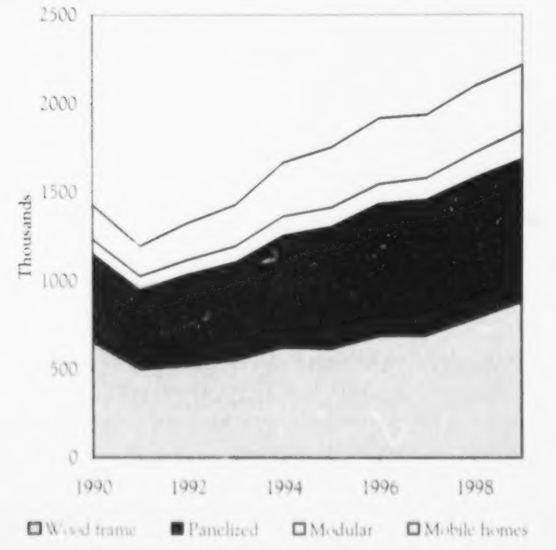
[3] Carrying beams support loads from above and span openings below.

[4] Chords are the top and bottom members of a truss, a pre-manufactured component used to support a roof, and more recently floors.

Source: Truss Joist Macmillan, 2000.

GRAPH 11.2.3

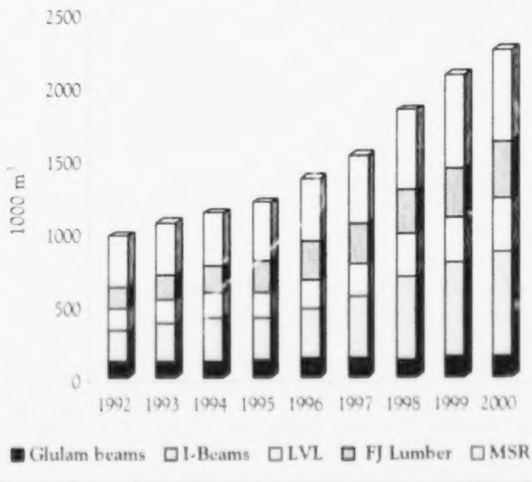
North American manufactured housing vs. Wood-frame construction



Source: Automated Builder, 2000.

GRAPH 11.2.4

Engineered wood product applications in North America



Note: For 2000, estimated data.

Source: Russ Taylor and Associates, 2000.

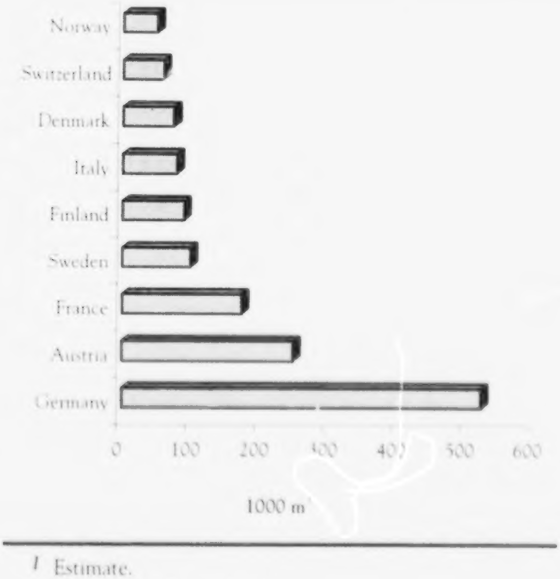
Glulam is the most heavily traded EWP within Europe, with the largest percentage of the domestic trade between Austria and the Nordic countries and the rest of Europe. The bulk of the intercontinental trade is from Austria and the Nordic countries to Japan. Germany is the leading European producer (graph 11.2.5) and the largest consumer of glulam on a per capita basis in the world.

In 1997, Europe was estimated to have consumed 80,000 m³ of LVL. LVL beams, trusses, and studs are common with only two Nordic producers supplying most of Europe's requirements and a small amount coming from North America. European applications favour engineered constructions, 80% as estimated by Jaakko Poyry and about 20% in I-beam or beam/header type applications. Application usage is split equally between residential and commercial structures. Germany accounts for 35% of the consumption, followed by the Nordic countries (30%), France (10%), and the remaining 25% scattered throughout Europe. In Germany some very large and complicated engineering structures and renovation projects utilize LVL. In central Europe, and especially Switzerland, LVL is used as a slab structure for roofs, while in France LVL portal frame structures are common. A small amount of non-structural LVL is also used in the manufacture of stairs, windows and door frames.

In Europe, I-beam usage is present but it is of low volume (5% of North America consumption) with the main application being supporting members for concrete forming systems. Four Austrian manufacturers produce about 85% of the European structural wood I-beams (Jaakko Poyry).

GRAPH 11.2.5

Glulam production in Europe, 1999 [1]



[1] Estimate.

Source: Jaakko Poyry, 1999.

11.2.3 Asia Pacific

Japan is both the largest consumer and producer of EWPs in the Asia Pacific region. The main products are LVL and glulam, with imports making up one-third of demand. The major supplying countries include Indonesia, New Zealand and Australia, with the latter two countries now starting to consume more EWPs domestically in residential construction. Malaysia and China are two more countries exporting to Japan.

Japan's imports of glulam increased by about 80% in 1999 over 1998, which was a weak year due to the Asian financial crisis. In the last two years Russia began exporting glulam to Japan (table 11.2.2 based on data from Zentral Markt-und Preisberichtstelle für Erzeugnisse der Land-, Forst- und Ernährungswirtschaft (ZMP) as reported by *Holz Journal*, 2000).

Wood product consumption in Japan continues to be impacted by Japan's overall weak economic situation and the weakness of the Japanese housing market, which accounts for a major share of the overall demand for wood products including engineered wood (see chapter 2).

The Japanese market is comprized of two major segments; wood-frame construction accounts for almost half of starts. The wood-frame sector has three sub sectors: traditional post and beam construction; Japanese light-frame construction; and pre-fabricated structures. Post and beam housing dominates the wood-frame sector with over 80% share (table 11.2.3).

The significance of the post and beam sector is that it is the residential sector that employs the most EWPs. As much as 86% of the imported glulam into Japan has been estimated as having gone into this housing sub sector. A recent survey of fifty large post and beam builders (Nikkan Mokuzai Shimbun, 1998) indicated that a major use of glulam was as long-span beams, posts or as sills. The glulam growth is the result of a growing need for EWPs as a substitute for green solid lumber and other conventional lumber products as the Japanese housing sector attempts to upgrade the quality of house construction in Japan.

Although there is small I-beam usage in Japan in the growing market for platform-frame construction, consumption to date is estimated to be less than 2 million lineal metres. All I-beams are imported from North America as there is no domestic production.

Regarding LVL and glulam markets, Japan is quite different from North American and European usage in that a significant share is used in non-structural, mostly decorative applications in furniture, fixtures and components. In fact, non-structural uses made up 80% of 1998 Japanese LVL demand. In addition, hardwood LVL makes up half of Japanese LVL consumption (APA and the Japanese LVL Association) (graph 11.2.6). For comparison, in North America most of the LVL produced is softwood-based while all LVL in Europe is softwood.

The Asia Pacific market including Japan was estimated to have consumed 410,000 m^3 of LVL in 1999. Japan produced 280,000 m^3, followed by Australia and New Zealand with an additional 80,000 m^3 combined. LVL in Australia is used primarily in construction applications. There is one large mill producing LVL in Australia and the remainder of the production is obtained from plywood mills diversifying their product lines. Australia consumes an estimated 44,000 m^3 (graph 11.2.7).

TABLE 11.2.2

Sources of Japan's imports of glulam, 1997-1999

(m^3)

	1997	*1998*	*1999*	*1999/1998* %
Austria	6,092	17,927	50,043	+ 179.1
United States	91,254	29,516	42,392	+ 43.6
Sweden	42,649	19,640	39,473	+ 101.0
Finland	16,041	12,737	33,151	+ 160.3
Germany	39,136	10,062	31,020	+ 208.3
Russia	0	23,630	26,280	+ 11.2
Canada	36,930	17,424	24,535	+ 40.8
New Zealand	7,325	7,789	11,417	+ 46.6
China	4,794	3,560	6,944	+ 95.1
Netherlands	8,916	3,273	1,133	- 65.4

Note: Data not entirely consistent with official data in table 11.3.4, but shown because of detail of source of imports.

Sources: *ZMP* and the Japan Laminated Wood Industrial Cooperative Association, 2000.

TABLE 11.2.3

Japanese housing starts by method of construction

	Post & Beam	*Platform Frame*	*Pre-Fab.*	*Non-wood*	*Total*
1994	619,103	64,037	38,291	848,822	1,570,252
1995	554,690	73,989	37,445	804,206	1,470,330
1996	619,028	93,693	41,575	888,970	1,643,266
1997	497,843	79,458	34,015	775,698	1,387,014
1998	447,287	67,923	29,923	653,162	1,198,295
1999	458,146	75,864	31,534	649,057	1,214,601

Source: Japanese Ministry of Construction, 2000.

TABLE 11.2.4

Estimated glulam consumption in Japan by type of housing

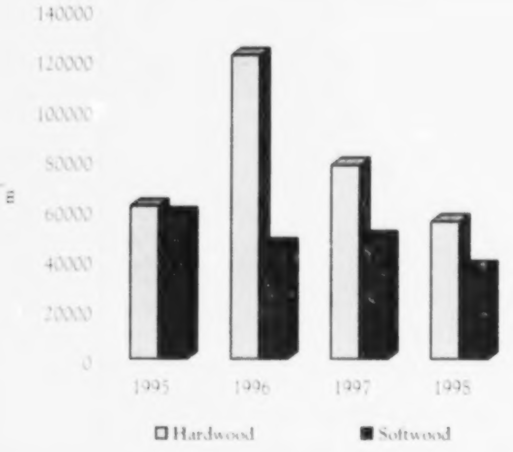
	1995	*1996*	*1997*	*1998*	*1999*	*2000(forecast)*
Post & beam housing starts	554,690	619,028	497,843	447,287	484,344	494,388
Glulam in beams (m^3)	25,000	139,000	112,000	201,000	218,000	334,000
Glulam in posts (m^3)	238,000	285,000	286,000	309,000	390,000	455,000

Source: Sumitomo Forestry, 2000.

In New Zealand, two LVL mills produce approximately 40,000 m^3 annually of structural and non-structural LVL destined for Japan. Consumption within New Zealand is nil. Meanwhile, in both Indonesia and Malaysia, the combined production of LVL is approximately 60,000 m^3 per year, again destined primarily for Japan.

GRAPH 11.2.6

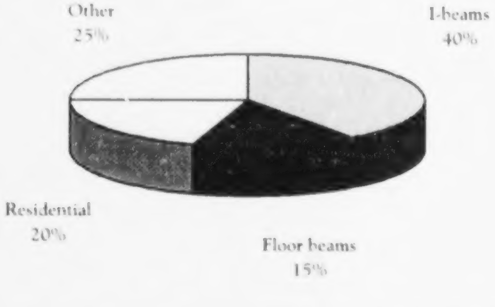
Japanese LVL production, 1995-1998



Source: Japanese LVL Association, 1999.

GRAPH 11.2.7

Estimated LVL consumption in Australia, 1999



Source: RWS Engineering Ltd., 2000.

11.3 Production, consumption and trade statistics

Statistics for EWPs are not as readily available as they are for other wood products due to the relative infancy of this industry. Therefore, the statistical tables in this section will not be as complete as in other *Review* chapters. The main problem is scarcity of trade statistics and this is due in large part to lack of tariff classifications for most of the EWPs. However, good production statistics are available. "Apparent consumption" will be reported only for those products and countries where import and export data are also available. Reliable consumption data exists for glulam in Europe, Japan, and North America, I-beams in North America and LVL in Japan and North America.

11.3.1 I-beams

Production and trade statistics

Consumption is essentially the same as production as international trade flows in I-joists are either non-existent or minimal. The only measurable trade flows are between the United States and Canada. I-joists are a North American product primarily due to prevalence in wood-frame construction in North America. In 1999, approximately 2 million m^3 of I-beams were produced worldwide with 95% produced and consumed in North America. I-joists now make up 40% of above ground, raised wood floors (excludes ground level concrete floor area) in the United States single family housing market and are expected to grow to as much as 80% market share in ten years.

The other major end use is for roof trusses, although market penetration to date has been lagging the success in the flooring market. New Zealand and Australia build wood-frame houses similar to North America. However, housing demand there is significantly less hence the lower production levels. Europe's primary use for I-joists is as support for concrete forming (flooring) applications. The European I-beams are characterized by an open-web lattice of solid timber in contrast to the North American product comprized of solid structural panel webs.

11.3.2 LVL

Production and trade statistics

LVL is similar to I-beams in that they are primarily produced and consumed in North America, although Japan is also a big consumer when structural and non-structural end uses are included (graph 11.1.1). North American end uses favour structural applications with the bulk consumed as flange material in I-joists (graph 11.3.1). In North America 95% of the LVL is from softwood species such as southern yellow pine and Douglas fir because of their good strength to weight ratios. There are also 3 hardwood-based plants using maple, oak and yellow poplar (tuliptree) in West Virginia and aspen and birch in Quebec.

TABLE 11.3.1

Production and trade of I-beams, 1995-1999

(1,000 m^3)

	1995	*1996*	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
						Volume	*%*
PRODUCTION							
Europe					105.0 [1]		
North America	833.7	1,045.8	1,316.7	1,493.1	1,879.5	386.4	+26
Canada	81.9	113.4	168.0	193.2	340.2	147.0	+76
United States	751.8	932.4	1,148.7	1,299.9	1,539.3	239.4	+18
EXPORTS							
North America	6.3	7.8	11.4	18.9	89.6	70.7	+374
Canada	4.0	5.0	8.0	15.0	85.0	70.0	+467
United States	2.3	2.8	3.4	3.9	4.6	0.7	+18
IMPORTS							
North America	4.0	5.0	8.0	15.0	85.0	70.0	+467
Canada	0	0	0	0	0	0.0	0
United States	4.0	5.0	8.0	15.0	85.0	70.0	+467

[1] *Estimated data.*

Source: APA, 2000.

TABLE 11.3.2

Production and trade of LVL, 1995-1999

(1,000 m^3)

	1995	*1996*	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
						Volume	*%*
PRODUCTION							
WORLD	997.4	1,158.6	1,332.7	1,402.5	1,705.5	303.0	+22
Europe	85.0	85.0	88.0	93.0	93.0	-	0
Asia	119.5	167.4	126.6	91.9	100	8.1	+9
Japan [1]	119.5	167.4	126.6	91.9	100	8.1	+9
Malaysia & Indonesia			60		60		
Oceania			42.0		40		
North America	792.9	906.2	1076.1	1,217.6	1,472.5	254.9	+21
Canada [2]				56.6	113.3	56.7	+100
United States [2]				1,161.0	1,359.20	198.2	+17
EXPORTS[3]							
IMPORTS							
Asia							
Japan	41.7	76.4	60.3	67.4			
North America							
Canada	0	0	0	0	0	0	0
United States				22.3	24.5	2.2	+10

[1] Japan LVL Association. Includes softwood and hardwood.

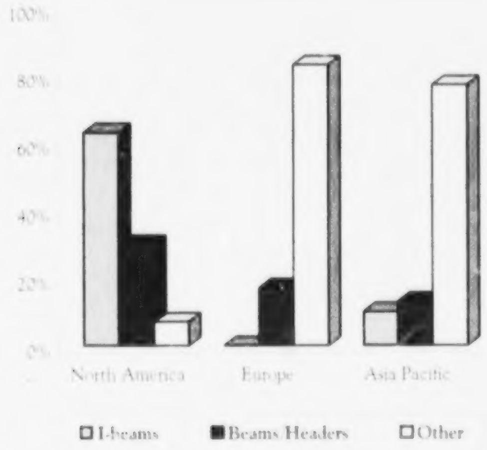
[2] Combined to avoid disclosure 1995-1997.

[3] Not available.

Source: APA, 2000.

GRAPH 11.3.1

LVL end uses by region



Sources: Japan LVL Association, 2000

End uses in Europe include commercial construction (engineered constructions) on the continent while residential construction dominates in the Nordic countries. Non-structural uses such as joinery and furniture applications are found in Europe and North America in small volumes.

In Japan non-structural uses are 77% of the market. Non-structural applications include fixtures and components, 51%, furniture, 7% and miscellaneous uses, 42% (Japan LVL Association). The Japanese LVL market is different in another important way in that it is manufactured from both hardwood and softwood fibre, much of which is imported. The hardwoods are tropical species from Indonesia primarily while softwoods come from North America, Russia, and the Nordic countries. Hardwood LVL normally is not as strong as softwood based LVL (strength/weight basis), hence hardwood LVL is used more in non-structural applications such as furniture. Softwood LVL in Japan is also used for crating and containers.

Trade in LVL is primarily to Japan mainly from New Zealand and the rest from North America. In 1999, Japan imported about 110,000 m^3 (Jaakko Poyry, 2000). The bulk of that came from New Zealand with North America supplying the rest. In 1999, Europe shipped 20,000 m3 to the United States while the United States sent about 10,000 m^3 to Europe.

Apparent Consumption.

Consumption patterns for LVL reflect differences in construction technology with structural applications dominating North America consumption while more decorative (structural and non-structural) uses are favoured elsewhere in the world.

TABLE 11.3.3

LVL Consumption, 1995-1999

(1,000 m^3)

	1995	*1996*	*1997*	*1998*	*1999*
North America	790*	900*	1,070*	1,191.2	1,438.1
Japan	161.0	244.0	187.0	159.0	

*Assuming negligible net trade.

Source: APA, 2000, including estimates.

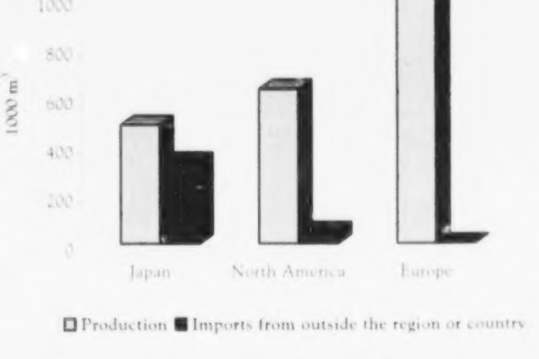
11.3.3. Glulams

Production and trade.

Glulam production is focused in three regions – Japan, North America, and Europe as seen in graph 11.3.2. Trade in glulam is primarily between Europe and Japan, and between North America and Japan. In 1999, Europe shipped 140,000 m^3 (12% of production) to Japan while North America shipped about 60,000 m^3 (8% of production). In addition, Russia shipped about 33,000 m^3 to Japan in 1999.

GRAPH 11.3.2

Regional glulam production and imports, 1999



Sources: APA, 2000; Japan Customs Bureau, 2000, and Jaakko Poyry, 2000.

Consumption.

Glulam is the most universally traded and consumed of all the EWP. Glulam is the one EWP that Europe consumes more of than North America and this trend is expected to continue. Germany is by far the largest consumer of glulam (graph 11.3.3).

TABLE 11.3.4

Production and trade of glulam, 1995-1999

(1,000 m^3)

	1995	*1996*	*1997*	*1998*	*1999*	*Change 1998-1999*	
						Volume	*%*
PRODUCTION							
World	1,761.3	1,974.6	2,128.6	2,159.9	2,609.0	449.1	21
Europe [1]	855.0	870.0	992.5	1,035.7	1,300.0	264.3	26
Austria	108.0	119.0	133.5	160.0			
Denmark	55.0	53.0	54.0	48.0			
France	100.0	100.0	100.0	110.0			
Germany	350.0	360.0	460.0	510.0			
Italy	54.0	48.0	50.0	55.0			
Netherlands	15.0	15.0	15.0	7.0			
Norway	56.0	54.0	52.0	32.9			
Sweden	70.0	75.0	81.0	74.8			
Switzerland	47.0	46.0	47.0	38.0			
Russian Federation	0	0	0	38.0	41.0	3.0	8
Japan [2]	208.1	340.1	385.0	374.2	483.7	109.5	29
North America	698.2	764.5	751.1	712	784.3	72.3	10
Canada	30.7	30.7	35.4	30.7	35.4	4.7	15
United States/Mexico [4]	667.5	733.8	715.7	681.3	748.9	67.6	10
EXPORTS							
Europe [5]	35.9	68.1	137.9	72.0	175.9	103.9	144
Russian Federation	0	0	0	30.6	32.9	2.3	8
North America	149.5	233.5	213.9	121.3	143.4	22.1	18
Canada	29.5	56.7	102.4	72.5	88.3	15.8	22
United States/Mexico [3, 4, 7]	120.0	176.8	111.5	48.8	55.1	6.3	13
IMPORTS							
Japan [6]	164.1	350.6	342.7	188.9	335.0	146.1	77
Of which from: Canada	20.8	30.2	38.9	18.4	25.8	7.4	40
United States	81.2	123.1	121.4	32.5	44.8	12.3	38
New Zealand	12.9	12.0	14.4	13.7	18.3	4.6	34
Sweden	16.3	33.4	43.5	19.7	40.2	20.5	104
Finland	12.2	14.8	19.8	13.3	34.6	21.3	160
Germany	3.5	10.7	42.2	10.7	31.5	20.8	194
Austria	0.1	0.6	6.3	18.0	50.4	32.4	180
China	0.8	3.5	15.9	15.3	32.7	17.4	114
Russia	0	0	0	30.6	32.9	2.3	8
Other	16.3	122.3	40.3	16.7	23.8	7.1	43
United States	24.3	43.3	59.1	46.7	49.6	2.9	6

[1] The European Glued Laminated Timber Industries Association.

[2] Japan Laminators Association.

[3] APA-The Engineered Wood Association. JLA import data used for United States exports and Japan imports since Japanese data are thought to be superior to the United States data collected from manufacturers.

[4] Data from one glulam plant in Mexico added to United States to avoid disclosure.

[5] Total European exports estimated by assuming that most of the volume went to Japan.

[6] Japanese Customs Bureau, Ministry of Finance.

[7] United States export data for 1997 smaller than Japan import data for the same year possibly due to shipment vs. arrival dates.

Source: APA, 2000.

TABLE 11.3.5

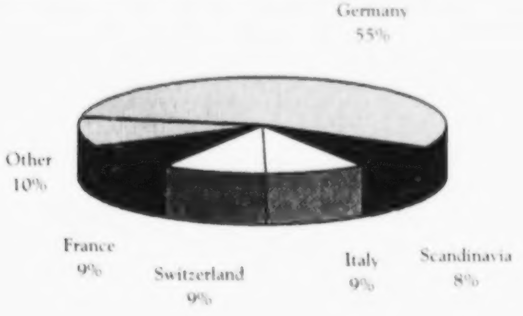
Apparent consumption of glulam, 1995-1999

	1995	*1996*	*1997*	*1998*	*1999*	*Change 1998-1998*	
						Volume	*%*
			(1,000 m³)				
EUROPE							
Production	855.0	870.0	992.0	1,036.0	1,300.0	+264	+25
Imports	0	0	0	0	0	0	0
Exports	36	68	138	72	176	+104	+144
Net trade	36	68	138	72	176	+104	+144
Apparent consumption	819.0	802.0	854.0	964.0	1,124.0	+160	+17
RUSSIAN FEDERATION							
Production	0	0	0	38	41	+3	+8
Exports	0	0	0	30.6	32.9	+2.3	+8
Apparent consumption	0.0	0.0	0.0	7.4	8.1	+0.7	+9
JAPAN							
Production	208	340	385	374	484.0	+110	+29
Imports	164.0	351.0	343.0	189.0	335.0	+146	+77
Apparent consumption	372.0	691.0	728.0	563.0	819.0	+256	+45
NORTH AMERICA							
Production	698	765	751	712.0	784	+72	+10
Imports	0	0	0	0	0	0	0
Exports	120	178	112	49	55	+6	+12
Net trade	120	178	112	49	55	+6	+12
Apparent consumption	578.0	587.0	639.0	663.0	729.0	+66	+10

Source: APA, 2000.

GRAPH 11.3.3

European glulam demand, 1999



Source: [illegible]

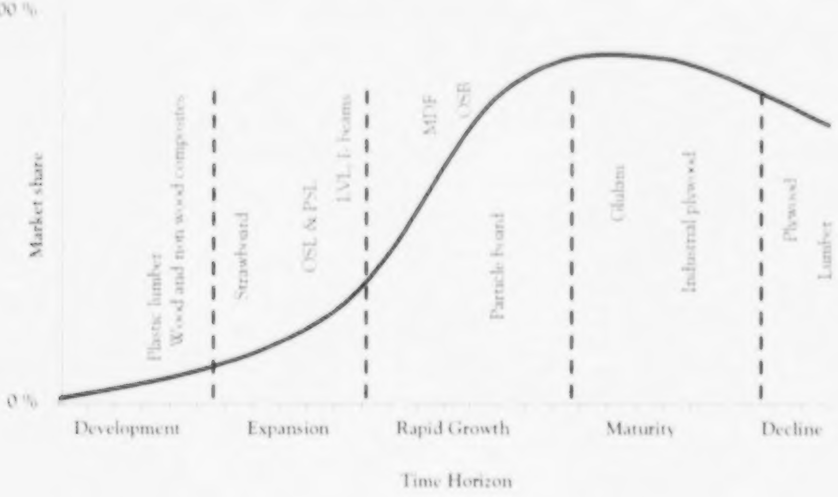
11.4 Outlook for EWPs

The outlook for EWPs is excellent with much of the impetus coming from the global need for efficient construction techniques, growing environmental concerns, and the universal requirement for affordable shelter. EWPs will continue to evolve and capture market share from maturing conventional building materials (graph 11.4.1). Product life cycles as depicted below are not uncommon – in fact they exist for all products. The only factor differentiating one product from another is the speed at which market share is gained or lost. Driving this evolution in EWPs are rapid technological developments in resin technology, press design, wafer geometry, drying systems, etc.

In addition, building codes all over the world have been switching to performance-based codes in lieu of the older "product-based" codes. Performance-based codes allow builders, architects, specifiers to take full advantage of the performance enhancing properties of EWPs. Due to the worldwide adoption of these codes, demand growth for EWPs escalates. These properties will help EWPs to compete "head on" with steel and concrete in the large non-residential building construction market.

GRAPH 11.4.1

EWP "Product Life Cycle"


100 %
0 %
Market share
Plastic lumber
Wood and non wood composites
Strawboard
OSL & PSL
LVL, I- beams
MDF
OSB
Particle board
Glulam
Industrial plywood
Plywood
Lumber
Development
Expansion
Rapid Growth
Maturity
Decline
Time Horizon

And, because many EWPs are made from young, small diameter trees, the fibre input can be truly labeled as "renewable". In fact, some EWPs actually enhance forest management options by providing a market for lower quality fibre (both species and diameter). For example, Timberstrand ™ and some North American LVL is made from trees that previously had limited economic markets. By providing markets for a wider range of species and grades, harvesting costs are often reduced, and additional silvicultural operations become economic.

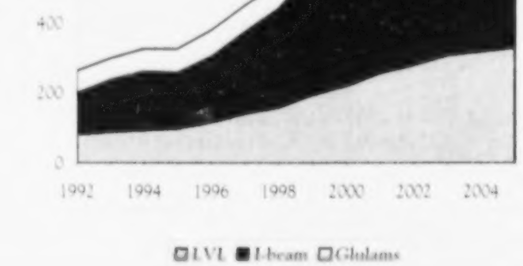
11.4.1 North America

The outlook for EWPs is encouraging as they continue to capture market share from conventional wood building materials. For example, I-joists now have over 40% of market share for raised wood floors, up from 20% in 1995 (APA, 2000). The number of EWPs plants in North America has doubled in the past decade according to APA statistics. EWPs production will have grown 150% between 1992 and 2000 (R. Taylor, 1999). Large increases in demand for LVL, I-joists, and glulam are projected over the next four to five years (APA, 2000) (graph 11.4.2).

Another aspect of EWPs is that the speed with which these products are being developed is increasing in response to changing needs in the market place.

GRAPH 11.4.2

Forecast EWPs growth in North America, 1992-2004



Source: APA, 2000.

Conventional wood products are losing appeal for a number of reasons:

- decreasing quality and performance as more younger and smaller trees are utilized;
- increasing costs;
- more demanding consumer; and
- tougher environmental regulations.

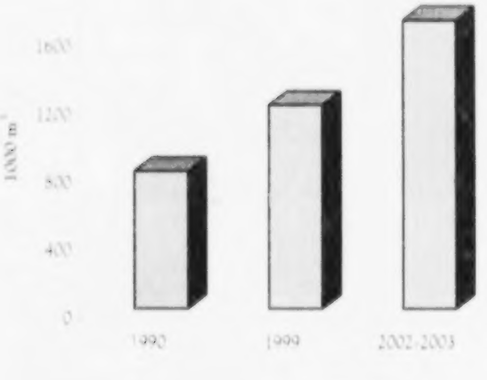
For all these reasons, EWPs are the product of the future as far as wood-based building materials are concerned. This is true whether referring to North America, Europe or Japan. Continuing evolution of all types of EWPs is expected.

11.4.2 Europe

Glulam production will continue to increase as timber frame construction gains in popularity (graph 11.4.3). This will help drive demand for glulam. Over 75% of production will continue to be exported to markets such as Japan. LVL and I-joists are expected to grow in response to growth in timber-frame construction.

GRAPH 11.4.3

Forecast growth of European glulam production, 1990-2003



Source: Jaakko Poyry, 2000

11.4.3 Japan

Japan will remain the major importer of EWPs in the world. EWP usage in Japan will grow as the residential construction industry continues to adopt new products for traditional post and beam housing and introduces panelized and platform frame construction technologies.

In addition to the slight economic recovery expected in Japan, another boost for EWPs is a discernible marketplace shift from quantity and price to quality and performance. The Housing Quality Assurance Law, implemented in 2000, requires Japanese builders to provide a ten-year warranty on all structural parts of a newly built home. This will favour dry sawnwood, stronger species, and further penetration of pre-cut packages, which in turn favour demand for EWPs. Revisions to the Japanese Building Standards Law implemented in June 2000 will direct a shift to performance standards, again favouring EWPs.

Deregulation of the Japanese housing sector has stimulated efforts to develop housing systems based on new building technologies and materials. Many of these new housing systems include LVL and glulam (*New Heavy Timber* magazine, 2000). In 1989, there were 15 new systems recognized and only one incorporated LVL or glulam. In 1998, 114 new systems were recognized with 57 incorporating LVL and or glulams.

11.4.4 South America

LVL production is expected to expand into this region over the next half decade. By 2005, an estimated production base of 300,000 m³ per annum is expected to evolve. The majority of this volume will be exported to the United States.

11.5 Conclusions

This chapter presents an overview of the current status and near-term outlook for an exciting group of emerging wood products that are quickly capturing market share from conventional products. Worldwide variances in consumption trends reflect differences in building construction techniques throughout the world with residential applications prevalent in North America and Scandinavia; commercial and non-residential markets in Europe; and a mixture of residential and commercial end uses in Japan. The outlook for EWPs is excellent as they represent the future of structural wood building materials, particularly residential construction in North America. Although reasonably good statistics on regional production by country are available, there is less data on international trade flows. The main problem seems to be lack of tariff classifications for I-joist and LVL trade into and out the United States. Japan has excellent statistics on LVL imports. Glulam trade statistics are the exception – they are excellent

Industry structure is concentrated, and becoming *more* so, which is consistent with conventional wood products, such as pulp and paper. One United States company, Trus Joist MacMillan, recently acquired by Weyerhaeuser, produces approximately half the LVL and I-beams produced in the United States. In Europe, most of the I-beams are produced by a few producers in Austria while most of the LVL is produced by Finnforest. Glulam production is the one EWP without the heavy concentration exhibited by other EWPs.

EWPs have two major efficiency or cost reduction advantages over conventional wood products that will enhance their continued growth:

- End use applications – superior technical properties (uniform strength) enhance design values that use less wood thus facilitating installation efficiencies (both labour savings and material reductions); and
- Conversion efficiencies, i.e. final product yield from the tree are significantly higher than lumber recoveries. The end result is that EWPs are competitive on an "installed cost basis" and they help us extend the valuable forest resource.

Engineered wood products are the future of wood building materials because they offer the best hope for incorporating technological change (resin technology, flaking machines, press technology, etc.) to ensure that forest products are cost competitive on an installed cost basis with all alternative building materials.

Chapter 12

Paper, Paperboard and Woodpulp – Production, Consumption and Trade [1]

Highlights

- Since early 1999 and through the first half of 2000 both the European and North American pulp and paper sectors sustained a strong economic recovery.
- Recovery contrasted with relatively volatile markets from 1996 through 1998, and afforded producers the best market conditions since the previous market peak in 1995.
- The recovery is attributed to stable economic growth in North America and Europe, restrained growth in mill capacity, and an upturn in Asian and global markets.
- A modest but unprecedented historical decline in paper and paperboard production capacity of -0.5% occurred in the United States in 1999. The capacity utilization rate improved.
- Domestic purchases and consumption of paper and paperboard in both North America and Europe have continued in general to follow upward economic growth trends.
- Although United States markets displayed considerable price volatility from 1996 through 1998, the trend in United States domestic purchases of paper and paperboard was steadily upward.
- Consumption of paper and paperboard was steadily increasing in both Europe and North America in recent years, reaching record levels despite intermittent market volatility.
- The resurgence of Asian and Latin American economies placed increased demand pressures on global fibre supplies, particularly market pulp and recovered paper.
- Production and consumption of pulp have risen in both North America and Europe, but pulp's share of total fibre input continues to decline as use of recovered fibre continues to rise.
- Since early 1999, prices have generally increased for paper, paperboard, market pulp and recovered paper, along with improvements in capacity utilization rates.

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Secretariat introduction

This chapter was written by Dr. Peter Ince of the USDA Forest Service in a cooperative arrangement with the secretariat. Dr. Ince is responsible for most of the analysis, notably that concerning the capacity-production-price relationships in the United States, which represents a major improvement in the depth of the analysis in this part of the *Review*. The secretariat wishes to express its gratitude to Dr. Ince and the Forest Service, for their important contribution.

12.1 Introduction

Since early 1999 and through the first half of 2000 the pulp and paper sectors of both Europe and North America sustained an economic recovery, which afforded the best market conditions for producers since the previous global market peak around 1995. Record levels of production and consumption for paper and paperboard were achieved in both Europe and North America. The economic recovery in pulp, paper and paperboard markets was indicated by higher prices for market pulp, paper and paperboard, and improved industry profitability. The recovery was attributable to a combination of factors, including, on the demand side, generally stable economic growth in the domestic economies of North America and Europe, and an upturn in Asian and Latin American economies following the Asian economic decline of prior years. As in the past, strong economic activity has positively affected demand for paper and paperboard. On the supply side, there has been restrained growth in overall mill capacity, limiting the over-supply which has occurred in the past. As a result, prices for pulp and paper have been firm in 2000 and profitability has improved.

A number of key factors influenced economic changes within the European and North American pulp and paper sectors, including mergers, consolidation and departure from historical patterns of growth in production capacity, particularly in North America. Corporate mergers, consolidation and slower capacity growth were a reaction to earlier market volatility and variable profitability that occurred in the mid to late 1990s, especially in the period from late 1995 to early 1999. The market volatility of the late 1990s was generally associated with a build up of capacity and excess product inventories in 1996, followed by the economic decline in Asia in 1997 and 1998. Market volatility was influenced also by expanded globalization of markets and by more recent currency exchange rate adjustments (i.e. strong United States dollar versus euro and other currencies).

This chapter analyses and discusses recent trends in markets for paper and paperboard, along with trends in woodpulp. This discussion is connected to discussion of pulpwood market trends, which are explained in Chapter 7 in the context of overall trends in wood raw material use. The definition of paper and paperboard in the joint FAO/ECE/Eurostat/ITTO questionnaire (see annex) was changed this year, to bring it more in line with commercial realities and industry practice. This change has introduced some discontinuities in the data series, which the secretariat has endeavoured to identify and correct. However, it is likely that a few remain, for which the secretariat apologises.

12.2 Paper and paperboard

Apparent consumption of paper and paperboard in both Europe and North America has continued to follow upward economic growth trends, correlated with GDP for example. Paper and paperboard markets for European and North American producers were generally improving since the first quarter of 1999 and at least through the first half of the year 2000. Production of paper and paperboard increased in the United States, but United States producers were somewhat hampered by the exceptionally strong value of the United States dollar. The strong value of the dollar and the earlier Asian economic decline in 1997 and 1998 dampened United States exports of paper and paperboard, while United States imports increased. European producers also suffered a temporary setback in markets in late 1998, largely due to the effects of the Asian economic decline. In general however, apparent consumption of paper and paperboard was steadily increasing in both Europe and North America in recent years, reaching record levels in 1999 despite earlier periods of intermittent market volatility.

During 1999, consumption of paper and paperboard) increased by more than 3% in Europe and by over 5% in North America (table 12.2.1). In the United States alone, purchases (not exactly the same as statistics for apparent consumption) of primary paper and paperboard commodities reached a record level of 93.8 million m.t. in 1999, up from 89.8 million m.t. in 1998, according to the American Forest & Paper Association (AF&PA, Paper, Paperboard & Wood Pulp, *Monthly Statistical Summary*, various issues). The increase in domestic purchases of paper and paperboard of 4.5% in 1999 was closely in line with robust United States domestic GDP growth (at 4.1% in 1999). Apparent consumption of paper and paperboard in the United States and Canada reached a record level of more than 100 million m.t. in 1999. European apparent consumption of paper and paperboard also reached a record level at approximately 85 million m.t. in 1999, up from 82 million m.t. in 1998. In the Russian Federation, consumption of paper and paperboard is reported to have risen strongly, by nearly 30%, although the per capita consumption is still well below that in Europe and North America.

TABLE 12.2.1

Consumption of paper and paperboard in Europe, the Russian Federation and North America, 1996-1999

(1,000 m.t.)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
EUROPE	73,463	79,211	82,470	85,322	2,852	3.5
of which:						
Germany	15,346	16,148	17,073	17,642	569	3.3
United Kingdom	11,374	11,906	11,413	11,870	457	4.0
France	9,130	9,772	10,743	10,844	101	0.9
Italy	8,187	9,590	9,592	10,236	644	6.7
Spain	5,407	5,661	6,021	6,377	356	5.9
Netherlands	3,348	3,493	3,894	4,434	541	13.9
Austria	1,298	2,032	1,985	2,136	151	7.6
Belgium-Luxembourg	1,951	2,338	2,736	2,858	121	4.4
Poland	1,692	1,992	2,088	2,250	162	7.8
Turkey	1,768	2,009	2,075	2,144	69	3.3
Finland	2,276	2,220	2,027	2,044	18	0.9
Other countries	13,964	14,270	14,850	14,533	-318	-2.1
RUSSIAN FEDERATION	2,212	2,353	2,128	2,751	623	29.3
Canada	6,733	6,515	6,722	7,961	1,239	18.4
United States	84,875	79,791	91,611	95,829	4,218	4.6
NORTH AMERICA	91,608	86,306	98,332	103,789	5,457	5.5

Source: ECE/FAO TIMBER database, 2000.

Table 12.2.2 displays recent paper and paperboard production data for Europe, the Russian Federation and North America (United States and Canada).

In 1999, European production of paper and paperboard rose by 2.3%, to just over 90 million m.t. In general, all major sectors of the European pulp and paper industry experienced growth in production. Production of all grades rose (except the residual "other paper and paperboard" which refers to a much smaller group of products than in previous years). Production of graphic papers increased by 2.3%. French graphic paper production grew at an above average rate, and the market leaders, Finland and Germany, slightly below average. Within graphic papers, woodfree grades achieved better gains than mechanicals, and coated grades performed somewhat better than uncoated grades

European production of packaging materials, whose volume is equivalent to about 80% of that of graphic papers, also rose, roughly in line with GDP at just over 2%, faster in the largest producer, Germany (+3.1%). This reflected the general level of manufacturing activity, which creates demand for packaging.

Production of sanitary and household papers, a sector which has not shown very fast long-term growth in the past, increased by 4.5% to 5.7 million m.t., with above average growth in Italy (+7.3%) and the United Kingdom (+13.1%).

According to the Confederation of European Paper Industries (CEPI, *Preliminary Statistics 1999*, February 2000), the last two years of the 1990s proved to be mirror images of one another in terms of the performance of European pulp and paper companies. (These more detailed trends are not apparent from the annual data in the tables.) According to CEPI, the year 1998 began with record output figures but by mid year a decline had set in which carried through into early 1999. However, the decline was arrested during the first quarter of 1999 and completely reversed by the end of 1999.

It is estimated that European paper and paperboard producers maintained an annual capacity utilization rate of approximately 95% in both 1998 and 1999. The record level of output ensured that European producers more than maintained their share of global paper and board output.

The slowing of growth, which occurred in the main European economies toward the end of 1998, led to a temporary depression in paper and paperboard markets and caused prices to decrease from the third quarter of 1998 into the first quarter of 1999. Depending on grades and countries, price declines were within a range of -5% to -15% according to press surveys. These declines seem

TABLE 12.2.2

Production of paper and paperboard in Europe, the Russian Federation and North America, 1996-1999

(1,000 m.t.)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
GRAPHIC PAPERS						
EUROPE	38,329	42,443	43,601	44,604	1,003	2.3
Finland	7,341	8,591	9,243	9,392	149	1.6
Germany	7,274	8,008	8,260	8,400	140	1.7
Sweden	4,453	4,870	5,023	5,125	102	2.0
France	3,924	4,259	4,024	4,200	176	4.4
Italy	2,840	2,931	2,968	3,069	101	3.4
Other countries	12,497	13,784	14,083	14,418	335	2.4
RUSSIAN FEDERATION	1,678	1,639	1,869	2,189	320	17.1
Canada	13,714	14,171	13,736	14,895	1,159	8.4
United States	28,856	30,872	29,221	29,732	512	1.8
NORTH AMERICA	42,570	45,043	42,957	44,627	1,671	3.9
SANITARY AND HOUSEHOLD PAPERS						
EUROPE	4,675	5,440	5,484	5,729	245	4.5
Italy	548	1,026	1,102	1,182	80	7.3
Germany	886	890	931	954	23	2.5
United Kingdom	586	639	635	718	83	13.1
France	508	534	514	520	6	1.1
Spain	284	329	393	416	23	5.9
Other countries	1,863	2,022	1,909	1,939	30	1.6
RUSSIAN FEDERATION	82	93	94	100	6	6.4
Canada	605	617	624	661	37	5.9
United States	5,681	5,831	5,973	6,210	238	4.0
NORTH AMERICA	6,286	6,448	6,597	6,871	275	4.2
PACKAGING MATERIALS						
EUROPE	32,520	34,642	35,346	36,222	876	2.5
Germany	5,562	5,953	5,983	6,218	235	3.9
Sweden	4,246	4,447	4,429	4,527	98	2.2
France	3,842	4,074	4,347	4,500	153	3.5
Italy	3,207	3,702	3,812	3,945	133	3.5
Finland	2,667	2,895	2,869	2,970	101	3.5
Other countries	12,996	13,571	13,906	14,062	157	1.1
RUSSIAN FEDERATION	1,046	1,199	1,242	1,605	363	29.2
Canada	4,105	4,181	4,365	4,591	226	5.2
United States	40,735	42,037	43,338	44,640	1,302	3.0
NORTH AMERICA	44,840	46,218	47,703	49,231	1,528	3.2
OTHER PAPER AND PAPERBOARD						
EUROPE	3,554	3,735	4,185	4,108	-78	-1.9
Germany	1,011	1,102	1,137	1,170	33	2.9
United Kingdom	361	415	464	515	51	11.0
Spain	302	302	366	423	57	15.6
Finland	423	459	420	400	-20	-4.8
Italy	359	373	373	373	0	-0.1
Other countries	1,098	1,084	1,426	1,227	-198	-13.9
RUSSIAN FEDERATION	418	411	390	574	184	47.2
United States	3,983	4,065	4,189	4,295	275	3.8
NORTH AMERICA	3,983	4,065	4,189	4,295	275	3.8

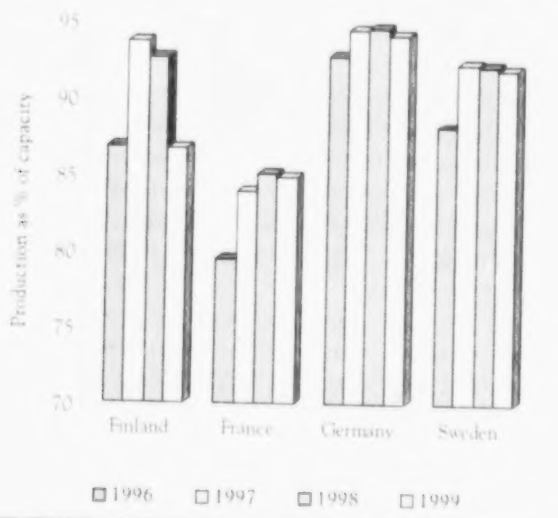
Source: ECE/FAO TIMBER database, 2000.

to have stopped during the second quarter of 1999, and a gradual market recovery was sustained well into the year 2000. With a positive outlook for European GDP growth and stabilization of the international environment, a robust and healthy year was expected for the European paper and paperboard industry, according to CEPI.

While market conditions inside Europe improved during 1999, exports outside the region suffered, particularly during the first half of the year. Expectations are that future export demands will be underpinned by the relatively low foreign exchange value of the euro in trade-weighted terms. Indeed, exports outside of the region began to show improvement late in 1999.

GRAPH 12.2.1

Capacity utilization rates for paper and paperboard in some European countries, 1996-1999



Sources: ECE/FAO TIMBER database, 2000; and FAO, 2000.

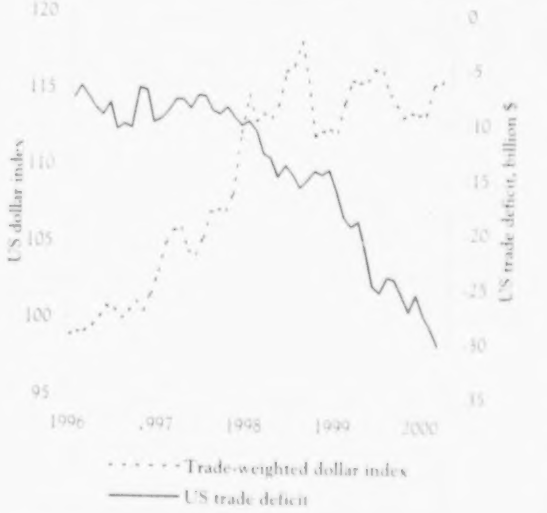
Graph 12.2.1 illustrates recent trends in capacity utilization rates (i.e. production as a percentage of the capacity reported to FAO) for paper and paperboard in four major European paper producing countries. Capacity utilization in 1998 and 1999 stabilized over 90% in Germany and Sweden and increased, from a lower level, in France. In Finland however, it fell, although this may be due to problems with the data as companies reported generally satisfactory operating rates in 1999. To analyse the interaction between capacity, production and profitability, it is necessary to have monthly data which are not available to the secretariat for Europe. For a more detailed analysis of this inter-relationship, see the section on the United States below.

In the United States, production of paper and paperboard increased in 1999 by 3.6%, rather less than the increase in United States apparent consumption (up 4.6% in 1999) or purchases of paper and paperboard (up 4.5% in 1999). The divergence between production and consumption of paper and paperboard in the United States reflects the widening United States trade deficit in paper and paperboard since 1997, with increased imports and decreased exports. In 1999, nearly half of the increase in domestic consumption of paper and paperboard was provided by increased imports (mostly from Canada, but also from Asia and Europe). The relatively high trade-weighted value of the United States dollar continued to dampen United States exports and provided an economic incentive for the high level of United States imports.

In 1999-2000 the exchange rate of the United States dollar rose and the overall United States trade deficit climbed to record levels. The trade deficit (all products, not just paper and paperboard) reached an all-time record of 30.2 billion dollars per month in March 2000. Graph 12.2.2 illustrates the apparent negative relationship between the overall United States trade deficit (United States Department of Commerce current accounts trade balance) and a trade-weighted United States dollar index (J. P. Morgan trade-weighted broad index).

GRAPH 12.2.2

United States monthly trade-weighted dollar index and monthly United States trade deficit, 1996-2000



Sources: J.P. Morgan, 2000; and United States Department of Commerce, 2000.

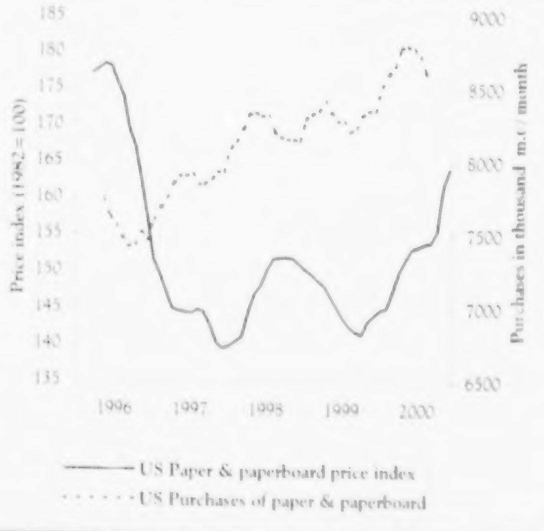
The United States trade deficit in paper and paperboard commodities also widened significantly in recent years: the tonnage difference between United States imports and United States exports has more than doubled since 1997. In 1999, United States exports were 8.6 million m.t., down from 9.0 million m.t. in 1998, while United States imports increased from 14.1 million m.t. to 15.3 million m.t. (AF&PA estimates). The widened United States trade deficit in paper and paperboard was attributable in part to the Asian economic decline in the period from 1997 to 1998, and also to the exceptionally strong value of the United States dollar.

It is interesting to examine briefly the developments for production (or shipments), prices, capacity and profitability in the paper and paperboard sector, using the United States as an example. As will be shown, the relationships between these parameters are complex, but crucial for the economic health and sustainability of the sector.

There was a divergence between paper and paperboard market trends and general economic trends, particularly in the United States where paper and paperboard market trends and industry profitability diverged at times from more robust domestic GDP growth trends. As shown in graph 12.2.3, trends in prices (monthly average United States price index for paper and paperboard), were very different from those for consumption (monthly United States purchases of paper and paperboard). In the late 1990s, United States domestic purchases continued an upward trend in association with growth in United States GDP, but market prices were much more volatile. United States paper and paperboard prices experienced a "double-dip", with a notable drop in prices in 1996, and a more prolonged period of weakness in 1997 and 1998 (associated with the Asian economic decline).

GRAPH 12.2.3

United States monthly average price index and domestic purchases of paper and paperboard, 1996-2000



Sources: AF&PA, 2000; and United States Bureau of Labor Statistics, 2000.

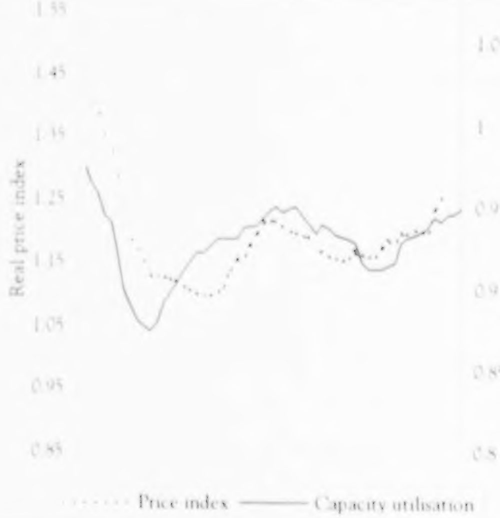
The volatility in prices apparent from graph 12.2.3 caused considerable variability in industry profitability, with notable industry-wide declines in profitability in 1996 and again in 1997 to 1998 (United States Department of Commerce, *Quarterly Financial Report*). As markets improved and prices increased from early 1999, industry-wide profits also improved, although prices and industry-wide profits remained below 1995 peak levels through the fourth quarter of 1999. Based on United States corporate reports, industry profitability continues to show signs of improvement into the year 2000. Nevertheless, market volatility and the experience of reduced profitability in the period from 1996 to 1998 contributed to an ongoing trend toward industry consolidation and reduced capacity growth. Mergers were negotiated among a number of large United States (and Canadian) firms, and in many cases the consolidations were associated with reductions in mill capacity through closure of existing mills. In general, the United States industry experienced a considerable slowdown, even reversal, of capacity growth relative to previous historical trends.

As a result, an unprecedented, although modest, historical decline in paper and paperboard production capacity of -0.5% occurred in the United States in 1999 as a result of mill closures and limited capacity expansion. This was the first reported decline in United States paper and paperboard capacity over the more than 40 years in which industry capacity data have been compiled, and it stands in contrast to an average annual capacity growth rate of about 2.5% over the preceding 20 years, according to the annual capacity survey of the AF&PA. In 2000, slow capacity growth is expected to continue: United States paper and paperboard capacity is expected to grow by only around 1%, according to AF&PA. Capacity growth decelerated also in Canada, to 1.7% in 1999 and is projected to be just 0.9% in the year 2000, according to the Pulp and Paper Products Council of Canada. (Increasingly in many cases, capacity decisions are taken by United States-Canadian or North American-European companies, applying a global, not national, strategy)

How to explain the apparent contradiction between rising purchases and variable, often low, prices and profitability? Developments in capacity, specifically the capacity utilization ratio, explain price/profitability trends quite well. The capacity utilization ratio (the ratio of actual production to available mill capacity) is an approximate indicator of the balance between market demand and short-run market supply. The numerator of the ratio, actual production, is an approximate indicator of product demand. The denominator of the ratio, available mill capacity, is an indicator of short-run market supply. Price trends are usually positively correlated with trends in capacity utilization, which is often a leading indicator of pulp and paper markets and profitability. Graph 12.2.4 shows for the United States the correlation in recent years between the inflation-adjusted United States average paper and paperboard price index and the United States capacity utilization ratio for paper and paperboard (displayed with a 6-month moving average for capacity and a 4-month lag in prices).

GRAPH 12.2.4

United States price index and capacity utilization rates for paper and paperboard, 1996-2000



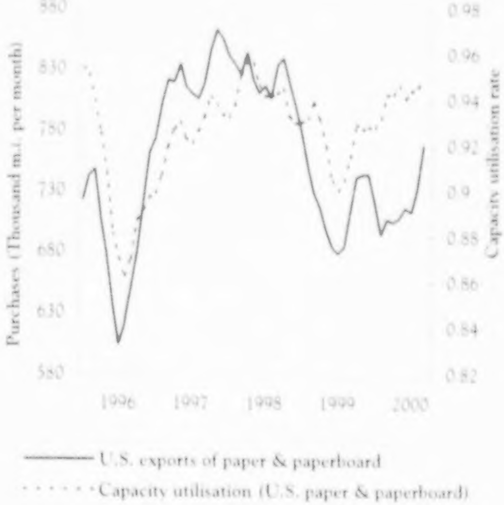
Sources: AF&PA, 2000; and United States Bureau of Labor Statistics, 2000.

Graph 12.2.4 shows the clear correlation, for the United States, between the price for paper and paperboard and the capacity utilization rate. The reduction in capacity in North America in 1999, at a time of rising production and consumption played a major role in raising the capacity utilization rate and thus strengthening prices and improving industry profitability.

This development is also linked to the trend towards mergers and acquisitions of major forest products companies, to form truly global players. One reason for this trend is to form "global companies for global markets", increasing marketing strengths and finding economies of scale in distribution. However, another important factor is the desire to bring capacity into a satisfactory relationship with demand, which involves maintaining or expanding the most efficient units and closing those whose operating costs are too high compared to the global industry average. Taking these difficult decisions is easier in the context of a very large company with several units for each grade, than in a smaller company where closure of one mill could mean leaving a complete sector or even winding up the company.

GRAPH 12.2.5

United States exports and capacity utilization for paper and paperboard, 1996-2000



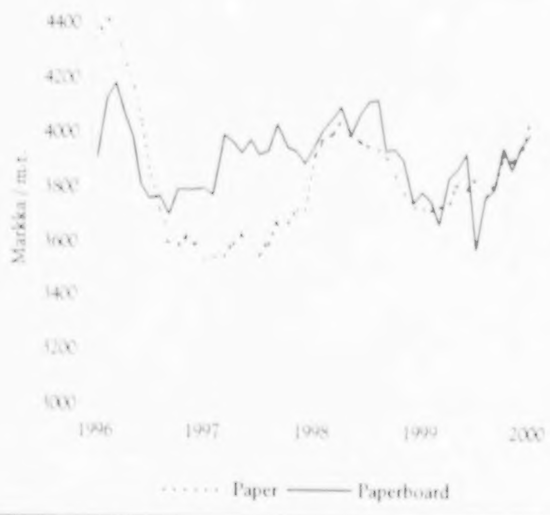
Sources: AF&PA, 2000; and United States Department of Commerce, 2000.

The interaction between capacity utilization rate and product price almost certainly exists also in Europe and other regions. However, at present, the secretariat does not dispose of sufficiently detailed statistical series to replicate the above discussion, prepared by Dr. Peter Ince, of this relationship in the United States. It is hoped to return to this question in future years. It is however worth noting that the trends for prices of paper and paperboard in Finland, shown in graph 12.2.6, are very similar to those for the United States in graph 12.2.3. This similarity is, of course, to be expected in a global industry which the paper industry has become over the past decade.

In the United States, during the late 1990s capacity utilization itself became highly correlated with trends in exports as shown by the monthly trends in graph 12.2.5. This correlation seems difficult to explain at first sight given the fact that United States exports are relatively minor compared to production for the huge domestic market. However, it is the outcome of increased globalization of United States markets and increased volatility of United States trade and export markets during the late 1990s. Thus, even though paper and paperboard exports represent only a small fraction of United States production, United States domestic market conditions have become strongly influenced by the volatile trends in exports.

GRAPH 12.2.6

Finnish export prices for paper and paperboard, 1996-2000



Source: Finnish Forest Research Institute, 2000.

The strong correlation, evident in the mid 1990s between United States paper and paperboard capacity utilization and exports, may however be waning, as the trends appear to diverge from early 1999. This divergence appears to be the result of reductions in mill capacity or mill closures in 1999, as reductions in mill capacity will tend to boost the capacity utilization rate regardless of export market trends. Faced with relatively weak export market conditions through 1999 (largely a result of the strong United States dollar) United States producers appear to have decided to concentrate on achieving a satisfactory utilization rate, rather than seeking to expand share of export markets (possibly at the cost of profitability). Thus, as shown above, the United States capacity utilization rate was increased from a low of around 90% in early 1999 to levels above 95% by the second quarter of the year 2000, while the trade deficit widened.

According to the Canadian Pulp and Paper Association (CPPA), Asia's gradual economic recovery had a palliative effect on the Canadian pulp and paper sector in 1999. Furthermore, Canadian paper and paperboard producers were leading beneficiaries of the strong United States dollar and declining United States trade balance in paper and paperboard, with United States paper and paperboard imports from Canada increasing substantially in 1999. CPPA reports that overall Canadian pulp, paper and paperboard exports were up substantially for every major market except for Japan and Latin America, for which Canadian exports both dropped by about 4% . Shipments to the United States – always Canada's largest customer – increased by a robust 9% in 1999. In 1999, exports to the United States accounted for 52% of all Canadian pulp and paper shipments, while shipments to Asia were 15%, shipments to Europe were 12%, shipments to other world regions were 4%, and shipments to the Canadian domestic market were 16%. For the first time in history, the total Canadian pulp, paper and paperboard export shipments to the United States exceeded 16 million m.t. Canada exported more of virtually every product grade to the United States in 1999. Canadian markets in Asia were broadened as pulp and paper exports to Asia excluding China and Japan rose by 25%. Overall capacity utilization for pulp and paper in Canada rose from less than 88% in 1998 to approximately 95% in 1999 according to CPPA, indicating a strong upward momentum in overall demand relative to short-run supply for paper and paperboard in Canada.

Russian production of paper and paperboard also rose strongly, by a quarter, to reach 4.5 million m.t. of which 1.7 million m.t. (38%) were exported. This is a further sign of the beginnings of a recovery in the Russian forest products sector in 1999, and of the important role that exports play in this recovery.

12.3 Demand and supply of woodpulp and other fibre

In conjunction with record levels of paper and paperboard production and consumption, woodpulp production and paper recycling rates were at relatively high levels in both Europe and North America in 1999. Production of woodpulp (table 12.3.1) did not increase as much as paper or paperboard production, largely because of continued gains in rates of paper recycling. Nevertheless, since early 1999 and well into the second quarter of 2000, prices for market pulp and recovered paper have been trending upward in both Europe and North America. The upswing in fibre markets was attributable in part to the upward trends in European and North American paper and paperboard production, but also attributable to a notable increase in global fibre demand.

Global fibre demand turned upward in 1999 in conjunction with economic recovery in the economies of Asia and Latin America. A number of new paper and paperboard mills began operation recently in Asia, and more are scheduled to begin operation in the near future (particularly in China). Included among the new Asian mills are some of the largest and fastest paper machines in the world, such as the two large paper machines at the Gold East complex in Dagang, China, which began operation in 1999 and set a new world record for paper machine speed (PPI, February 2000). Many of the new mills are operating on the basis of imported market pulp

TABLE 12.3.1

Production of woodpulp in Europe, the Russian Federation and North America, 1996-1999

(1,000 m.t.)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
MECHANICAL WOODPULP						
EUROPE	11,744	13,173	13,486	13,234	-251	-1.9
of which:						
Finland	3,489	4,469	4,637	4,602	-35	-0.8
Sweden	2,753	2,959	3,026	3,029	3	0.1
Norway	1,502	1,534	1,664	1,644	-20	-1.2
Germany	1,133	1,220	1,191	1,192	1	0.1
France	757	845	762	760	-2	-0.2
Other countries	2,110	2,146	2,206	2,007	-199	-9.0
RUSSIAN FEDERATION	976	899	981	1,160	179	18.2
Canada	10,973	11,354	10,481	11,213	732	7.0
United States	5,918	5,401	5,291	5,110	-181	-3.4
NORTH AMERICA	16,891	16,755	15,772	16,323	551	3.5
CHEMICAL WOODPULP [a]						
EUROPE	23,983	26,055	26,367	26,864	497	1.9
of which:						
Sweden	7,413	7,857	7,842	7,983	141	1.8
Finland	6,296	7,241	7,339	7,608	269	3.7
France	1,762	1,985	1,913	2,000	87	4.5
Portugal	1,595	1,703	1,708	1,755	47	2.8
Spain	1,409	1,546	1,545	1,618	73	4.8
Austria	1,206	1,251	1,274	1,319	45	3.5
Poland	820	828	856	825	-31	-3.6
Norway	840	900	829	782	-47	-5.7
Germany	719	763	782	715	-67	-8.6
Czech Republic	412	453	490	504	14	2.9
Slovakia	246	181	339	374	35	10.3
Other countries	1,265	1,347	1,450	1,381	-69	-4.8
RUSSIAN FEDERATION	2,841	2,851	3,010	3,922	912	30.3
Canada	13,625	13,795	13,363	14,400	1,037	7.8
United States	54,413	54,964	54,233	53,261	-972	-1.8
NORTH AMERICA	68,038	68,759	67,596	67,661	65	0.1

[a] Including semi-chemical woodpulp and dissolving grades.

Source: ECE/FAO TIMBER database, 2000.

(in the case of paper mills) or on the basis of recycled fibre (often imported fibre in the case of paperboard mills). Among new Asian mills are several new linerboard mills in China that will use recycled fibre, including imported old corrugated containers. Although much of the imported market pulp for Asian mills comes from sources in Asia, such as from pulp mills in Indonesia, growing fibre demands in Asia and Latin America have placed new demand pressures on global fibre markets. Producers of paper or paperboard in Asia and Latin America have also obtained market pulp and recovered paper directly from North American and Europe in some cases (PPI).

European pulp production rose very slightly (+0.5%) to reach 40 million m.t. Production of mechanical pulp fell by nearly 2%, with decreases around 1% in Finland and Norway. At least in the former country, this was part of a long term strategy to move towards the industry's perceived strengths, which are seen as being in wood free papers, based on chemical pulp. Chemical pulp production in Europe rose by less than 2%, with faster growth in France and Spain and declines in Poland, Norway and Germany.

The slower growth of pulp production in Europe than of production of paper and paperboard is attributable to increased pulp imports from other regions, but also to the continuing growth in importance of recovered fibre.

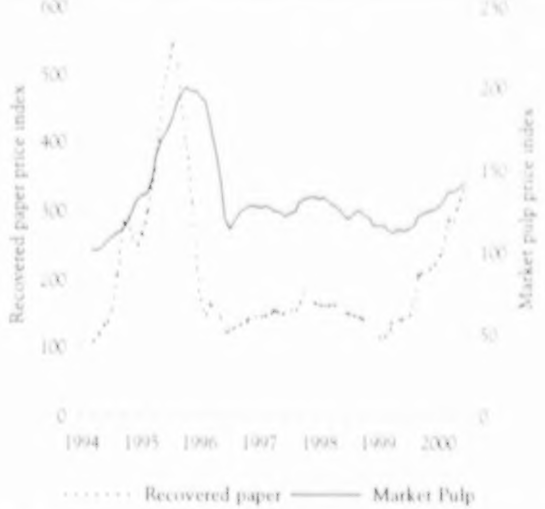
The world market price for pulp remained stable from early 1996 to mid 1999, at about $460 to 580 (per ton of Northern Bleached Softwood Kraft (NBSK) – the benchmark grade). This period of relative stability followed the severe price peak in 1995 to 1996 when the price first rose to nearly $1000, then fell to about $450 in a few months. However in mid 1999, demand strengthened after the Asian crisis, capacity growth slowed and stocks (inventories) were brought down. By May 2000, NORSCAN (North American and Scandinavian) stocks of market pulp were only slightly over 1 million m.t., a very low level in historical terms. As a result pulp prices rose. In July 2000, market pulp prices were around $700. However the cost of pulp to buyers outside the dollar area is also influenced by exchange rates, notably the euro's fall against the dollar. Thus pulp costs for European buyers are beginning to approach the levels experienced in 1995, with the combined effect of the rise in pulp prices and the fall in the euro. As Europe is perhaps the pivotal part of the global pulp market, this could exert downward pressure on the pulp price in the future.

According to data from CEPI, European paper and paperboard products on average contain 85.5% fibrous material, mostly wood fibre (including 45.0% virgin pulp, 39.8% recycled fibre from recycled paper, and 0.7% other pulp fibre) and also 14.5% non-fibrous materials (mainly clay coatings and pigments). The recovery of paper for recycling in western Europe reached 49.4% of total paper and paperboard consumption in 1998 according to estimates for CEPI member countries.

In the United States, production of woodpulp also declined in 1999, by 2.0% between 1998 and 1999, dropping from 59.5 million m.t. to 58.4 million m.t., as United States imports of pulp increased from 5.4 to 6.0 million m.t. and exports dropped from 5.0 to 4.9 million m.t. The net supply of woodpulp for domestic paper and paperboard production dropped by less than 1% from 59.9 to 59.5 million m.t. Recovery of paper for recycling in the United States increased by 2.1 million m.t., reaching a record level of 42.9 million m.t. according to AF&PA. The United States recovery rate increased to 45.0% from 44.5% according to AF&PA. The upswing in fibre markets is illustrated by trends in average price indexes for market pulp and recovered paper in the United States, as shown in graph 12.3.1.

GRAPH 12.3.1

United States average price indices for market pulp and recovered paper, 1994-2000



Source: United States Bureau of Labor Statistics, 2000.

Chapter 13

Certified Forest Products Marketplace

Highlights

- Potential supply of certified forest products is growing faster than market demand.
- Market demand for certified forest products continues to be more from retailers and not final consumers.
- The Timber Committee believes certification currently has value as a communication and marketing tool, in addition to its primary objective of encouraging sustainable forest management.
- Thus far, most certified forests are in the ECE region – only 8% are in the tropics.
- The new Pan-European Forest Certification system is coming on stream and has the possibility of doubling the forest area certified in Europe within 2 years.
- Some forestlands are achieving multiple certifications and mutual recognition between certification schemes is being initiated.

13.1 Introduction

The analysis of certified forest products (CFPs) markets is a regular chapter now in the *Review*. An initial special chapter on the subject was included in 1998 and last year the first regular chapter was published. The Timber Committee expanded its market discussions to include this sector as it feels that CFPs are important, especially as the certification of sustainable forest management remains a topical issue at the beginning of the new millennium.

At the 1999 market discussions, the Committee saw value in certification as a communication tool to provide a channel of communication between the sector and the people outside of the sector. Delegates explained that certification is, among other things, a marketing tool and indeed some companies have found valuable, but sometimes not directly profitable, benefits from manufacturing CFPs or at least in environmentally-oriented marketing. Some delegations expressed concern that a multiplicity of certification schemes could actually harm the image of wood by confusing the consumer.

Information for this chapter came from a variety of sources, but does not come from country-supplied statistics to a formal questionnaire like the preceding chapters. Customs classifications do not make the distinction between CFPs and other products. Considerable information for this chapter came from a forthcoming *Geneva Timber and Forest Discussion Paper* entitled "Status of forest certification in the ECE region: Summer 2000 update". We are indebted to the authors of that *Discussion Paper*: Messrs. Eric Hansen (Oregon State University, United States), Keith Forsyth (VELUX A/S, United Kingdom) and Heikki Juslin (University of Helsinki, Finland). Other sources are listed in the text where they are referenced.

Some information for this chapter was gathered from the Internet. A new Market Information Service is on the Timber Committee web site and it includes information and links about CFPs (www.unece.org/trade/timber/mis.htm).

13.2 What are CFPs?

Certified forest products bear labels demonstrating in a verifiable manner that they come from forests that meet standards for sustainable management. Consumers might find labels on furniture and wood products while manufacturers could verify the source of certified products from a system of chain of custody that precisely identifies the origin of the wood.

13.3 What are the objectives of certification?

Certification systems have two major components:

- A system to determine whether a particular forest area is managed in a sustainable way; and
- A system to verify that forest products are in forest produced from the specified forest area (chain of custody).

The overriding objective is to promote sustainable forest management by informing final consumers whether the product they are buying is from a sustainably managed forest. However, the interests and objectives of the various actors – forest owners, forest industries, wholesalers, retailers, managers of certification systems, certifying companies, consumers, governments – vary widely. Sometimes, they conflict. To be successful, a certification system must further the objectives of all actors, or at least be acceptable to them.

This chapter examines, first, demand for certified forest products (e.g. consumer attributes, volume available, distribution channels) and then supply (e.g. certification systems in place, area of certified forest).

13.4 Demand for CFPs

13.4.1 Why sell CFPs?

Despite the weak demand by consumers, some manufacturers are producing and some retailers are selling CFPs for other reasons than sheer economics. At the Timber Committee's September 1999 market discussion, Dr. Richard Vlosky (Louisiana State University, United States) stated that the "green premium" for producing and selling CFPs, may not be in terms of higher prices, but of an improved image of the producer or retailer.

It bears repeating, from a *Geneva Timber and Forest Discussion Paper*[1] by Drs. Eric Hansen (Oregon State University, United States) and Heikki Juslin (University of Helsinki, Finland), *The Status of Forest Certification in the ECE Region*, a passage about reasons, other than direct profit, for marketing CFPs:

- Access to new niche markets;
- Promotion of a company's "environmental" image and policy;
- Credibility in communication with customers; and
- Building strategic marketing networks.

It seems that the marketplace is changing rapidly for CFPs. Many manufacturers and forest owners (including governments) in the ECE region were resistant to certification initially, stating that they knew that their management was sustainable and the burden of certification would simply add an additional, non-retrievable cost. In the last few years, however, more forest managers and manufacturers have changed their opinions and now consider that certification may indeed have additional values, for example as a communication and marketing tool. Likewise many trade associations that are involved with CFPs through their members welcome the public relations opportunities of certification to promote wood as an environmentally-friendly, renewable resource.

Many (but not all) traditional forest sector actors in western Europe and North America, including forest owners, forest industries and state forest services, have ceased to see certification as a threat and a burden imposed by "outsiders" (environmental NGOs). Now they see it rather as an opportunity to check and improve their own practices against objective criteria and to demonstrate to consumers and NGOs that their practices do in fact constitute sustainable forest management.

Current market research shows a continued lack of awareness of environmental issues and certification. For example, sawmills on the West Coast of North America saw little environmental awareness in their most important customers (Seppälä, 2000)[2]. Nevertheless, respondents in the study did see good forest management as a source of competitive advantage.

In summary, at this early stage of evolution of the CFPs market, the direct revenue from price premiums by selling CFPs is not common. Many studies have been conducted that indicate consumers are willing to pay more for CFPs than equivalent un-labelled wood products. However, actual buyer behaviour does not always correspond to the stated intention and is naturally influenced by such factors as availability, price and quality. Nevertheless, some potential for price premiums exists in specific market niches. In short, the question of whether or not it is possible for sellers to get a premium for CFPs has not yet been fully tested in the market. If such a premium could be created, there would remain the question of how it would be distributed between forest owners, producers, wholesalers and retailers.

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[1] ECE/TIM/DP/14, 1999.

[2] Unpublished thesis by Mr. Jarno Seppala, Forest Products Marketing Department, Oregon State University, United States, 2000.

13.4.2 Where are CFPs sold?

CFPs can be broken down into: 1. purchases by final consumers, e.g. at a furniture store; 2. industrial products for further manufacturing, e.g. sawn hardwood that goes into furniture purchased directly from producers or through agents and middlemen.

Like other markets, the market for CFPs is being affected by the development of the internet. Suppliers, buyers and providers of certification services are now able to provide information, develop business relationships and trade online. For instance, the North America-based Certified Forest Products Council currently provides an online service which enables potential buyers to search for suppliers of certified wood products. Later in 2000, they envision development of online trading in CFPs. On a relatively small scale, other online traders are currently successfully supplying customers with certified wood products via the internet. It is expected that as Internet-based marketing systems are developed, CFPs will find a place in them.

13.4.3 Main components of demand for certified forest products

Globally CFPs represent less than 1% of the value of sales of forest products. However in some markets they have greater importance; for example, in the United Kingdom they are estimated to have a 20% share of the market for forest products, including wood and paper (Boilley, *Le Commerce du Bois*, June 2000). The strongest impetus comes from some retailers and wholesalers who are committed to selling wood produced according to certifiable sustainable management, rather than directly from final consumers. It appears that final consumer market demand is small and thus the situation is more of a supply-push than a demand-pull. Manufacturers have generally been concerned with sustainable sources of supply of wood raw materials to their factories and some now are heeding the call from some retailers to produce CFPs. From a pure marketing view, the key demand from the final purchaser is missing and will only be created through considerable public relations efforts to educate consumers about potential advantages of CFPs over non CFPs.

This section analyses separately demand from final consumers, from retail and industrial buyers and from manufacturers.

13.4.3.1 Consumer demand

There is little new information available on final consumers' preferences for CFPs. Some initial studies investigated the potential for achieving price premiums to cover the additional forest management and forest products manufacturing costs of certification. While the studies generally found a willingness to pay premiums, this could not be confirmed at the cash register. Environmental aspects of products in most cases are not regarded as being of key importance in purchases (*Sustainable Forest Management Certification*, by Rametsteiner, 2000). There has been continual erosion of wood products' market share in the following building products: windows, doors, facades, furniture, framing, etc. (*The Competitive Climate for Wood Products and Paper Packaging: the Factors Causing Substitution with Emphasis on Environmental Promotions*, by Burrows and Sanness, 1999).

The importance of environmental considerations, as opposed to considerations of price, performance or fashion, in these developments is not clear. It could be that purchasers consider wood an environmentally-friendly raw material but do not take this into account in their decisions. Or perhaps they consider wood use to be hostile to the environment (encouraged in this belief by public relations work from competing materials) and are for that reason, reducing their purchases of forest products. If the first supposition is true, introduction of certification is unlikely to have much influence. If the second is true, certification could be the key to recovering lost market share.

13.4.3.2 Retailer demand

Heretofore termed "buyers' groups", The Global Forest and Trade Network established by the WWF is designed to create demand for CFPs. The name was changed to accept producers' groups, the first of which has been formed in Russia. Other producer groups are planned in other countries. Buyers' groups have been started in many countries in the ECE region and outside (table 13.4.1).

The first buyers' group, the 95+ Group in the United Kingdom, has had an undeniable impact on the development of and demand for certification. The Group is now made up of 94 companies and 11 local authorities. These companies make up nearly $6 billion in wood products sales. One of the reasons the Group has had such a significant impact on certification is that as a whole, they purchase and distribute wood products from 80 different countries, 28 of which are now supplying certified wood. To reach their long-term goal of 75% of trade of forest products in the United Kingdom, their membership will be expanded into other sectors such as

TABLE 13.4.1

ECE region members of the WWF Global Forest and Trade Network, 2000

	Group Name	*Founded*	*Members*
Austria	WWF Gruppe 98	1996	25
Belgium	Club 97	1994	41
Germany	Gruppe 98	1997	58
Switzerland	WWF Woodgroup	1997	20
Netherlands	Stichting Goed Hout!	1995	41
Finland, Sweden, Denmark, Norway	WWF Skog 2000	1998	32
Spain	WWF Grupo 2000	1998	13
United Kingdom	WWF 95+ Group	1991	102
North America	Certified Forest Products Council	1997	239
France	Club PROFORETS	1999	9
Russia	Association of Responsible Producers of Russia	2000	66
Ireland	Just Forests	2000	6

Source: WWF Forests for Life, 2000.

specifiers, construction, small businesses, producers, forest managers and supporters.

The year 2000 was to be a significant milestone for many of the early members of the 95+ Group. The goal was to be selling 100% certified products by the end of 1999 but at present approximately 9% of the Group's trade is certified. Originally the group was exclusively limited to Forestry Stewardship Council (FSC) certification, but as supplies of FSC-certified wood products do not yet equal the Group's demand, some members are open to sales of products certified by other systems, especially if there were mutual recognition between schemes (more detail in the *Discussion Paper*).

Environmental groups in North America have recently had significant success in steering companies away from old growth wood and toward certification. The world's largest chain of do-it-yourself stores, The Home Depot, announced that it would stop selling wood products from environmentally sensitive areas and give preference to certified wood. In response to the company's challenge, several of its competitors are following its example.

13.4.3.3 Manufacturing demand

At this time in most ECE countries there exists no domestic demand, either from consumers or from retailers, for CFPs. However there is growing demand from export-oriented manufacturers who target environmentally sensitive markets, for example the Netherlands and the United Kingdom. The same situation applies to many tropical timber producers and industry customers in North America have taken the interest in certification to a new level in that region. The demand from retailers is clearly making its way back to producers of primary and secondary producers. Questioned by their customers whether the wood sold is from sustainable forest management, some manufacturers have initiated chain-of-custody procedures to demonstrate that the wood they sell really comes from sustainably managed forests.

So far, the system that is clearly demanded in the European marketplace is FSC. As Pan-European Forest Certification system (PEFC) has only recently been constituted and the first countries' systems agreed in summer 2000, no PEFC-certified material is yet on sale.

13.5 Supply of CFPs

At this time in the early evolution of modern certification of sustainable forest management, as no statistics exist on the volume or value of certified wood coming out of ECE region forests, this section describes the area of forestland certified. There are a few international systems plus a number of systems operating in individual countries (these may or may not be "national" systems, i.e. established by national governments). The international schemes are the International Organization for Standardization (ISO), FSC and the PEFC. Since the inception of certification of sustainable forest management, considerable debate has surrounded the schemes' perceived advantages and disadvantages. They are often seen as being mutually exclusive, but this may not in fact be the case. Some forest managers are arranging for their management to be

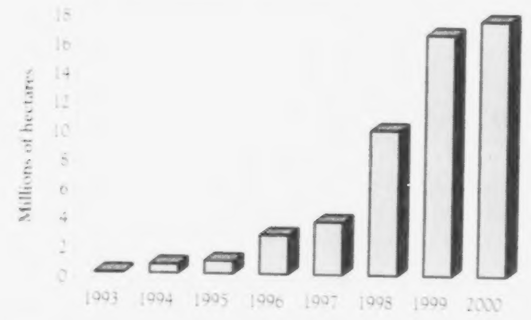
13.5.1 FSC

Since 1993 the area of FSC certified land has grown to approximately 17.6 million hectares as of June 2000 (FSC, 2000) (graph 13.5.1). This is approximately 1.4 million more than reported in last year's Review. Sweden dominates with approximately 9 million hectares, or over half of the total FSC certified land (graph 13.5.2). The number of chain of custody certificates was 735 in a total of 37 countries. Membership in FSC, which is divided into environmental, social and economic members, has climbed to 369 environmental non-governmental organizations, individuals, companies, university faculties, institutes, associations, etc. A total of 9 certifiers now have FSC accreditation and 7 await approval.

FSC has changed its percentage-based claims policy. The new policy allows lower percentages of FSC certified content in chip and fibre products. This new policy will be a challenge to follow through chain-of-custody. For assembled products to be certified by FSC, they must contain at least 70% of their volume in certified wood.

GRAPH 13.5.1

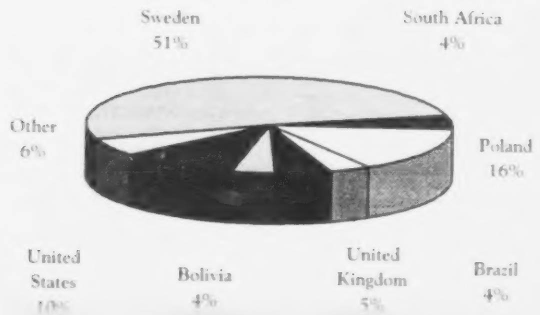
Area of FSC-certified forestland, 1993-2000



Source: FSC, 2000.

GRAPH 13.5.2

Distribution of FSC-certified forestland, 2000



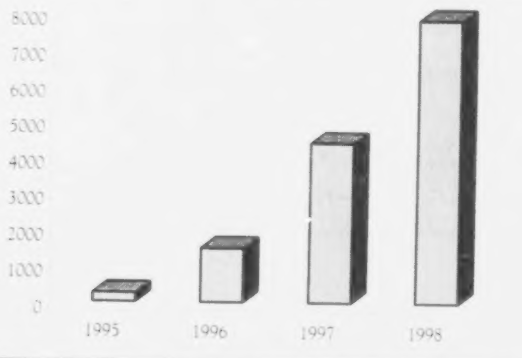
13.5.2 ISO

Not a certification scheme, but rather a set of internationally-recognized standards, the International Organization for Standardization has the ISO 14000 series of standards which the Organization has allowed to be used for certifying the environment management systems of forest and timber production operations.

Within the last year a number of companies in the forestry and wood products industry have obtained ISO 14001 Environmental Management System (EMS) certificates (graph 13.5.3). At the end of 1998, ISO records showed that a total of 7,887 ISO 14001 certificates had been issued, an increase of 78% when compared to the 1997 figure of 3,454. Of the total 7,887 certificates, 7,112 were classified into industrial sectors. Certificates issued to companies in the "Pulp, Paper and Paper Products" sector totalled 209, while certificates issued in the "Wood and Wood Products" sector totalled 34. It should be noted that 1S0 14001 certifies the existence and performance of an environment management system, not the attainment of specified forest managed standards.

GRAPH 13.5.3

ISO 14001 environmental management system certificates, 1995-1998



Source: ISO, 1999.

13.5.3 PEFC

The PEFC Council was launched in June 1999 as a voluntary, private-sector initiative, to certify sustainable forest management according to the Pan-European [illegible] on the Protection of Forests in Europe.

The purpose of the PEFC scheme is to promote an internationally credible framework for the mutual recognition of forest certification schemes and initiatives in European countries (PEFC, 2000). Timber from certified forests that meet the PEFC criteria and requirements will have access to the PEFC logo.

Membership in PEFC is different than in FSC and currently consists of 14 national PEFC groups:

- PEFC Austria
- WoodNet asbl, Belgium
- The Council of the National Certification Centre – Czech Republic
- PEFC Denmark
- PEFC France
- Forest Certification Council, Finland
- German Certification Council
- PEFC Council of Ireland
- PEFC Latvia
- PEFC Norway
- Conselho Da Fileira Florestal Portuguesa, Portugal
- CEF (Certificación Española Forestal), Spain
- Swedish PEFC Interim Board
- PEFC Switzerland

As of June 2000 a number of the groups above had applied for acceptance under PEFC, and some forestlands may be certified under PEFC this year. However, because of the strong interest in many European private forest owners' associations and governments to have their forests certified under PEFC, the potential exists for the certified forestland in Europe to double within 2 years.

It is a common misconception that PEFC only works on certification issues in Europe. In reality, PEFC focuses on Europe but is potentially global in its coverage and has the possibility to endorse certification standards worldwide. PEFC is understood to have entered into discussions with some Canadian organizations with a view to possibly endorsing certification schemes in Canada.

13.5.4 SFI

The Sustainable Forestry Initiative (SFI) is a United States system run by the American Forest and Paper Association whose membership controls approximately 90 percent of the industrial forestland in the United States, or just over 23 million hectares. Acceptance of SFI is a condition for membership of AF&PA, the main United States industry association. In addition, licensees (non AF&PA members) such as state and county

hectares. The SFI celebrated its fifth anniversary in 2000

with a new standard which includes five principles, eleven objectives and 37 performance measures. SFI has developed a third-party verification option for the system, which previously relied on self-certification and as of the end of 1999, approximately 20 million acres had been either committed to or completed the verification process. Many of the major corporate members have chosen to undergo verification.

SFI and the American Tree Farm System recently announced mutual recognition between the two systems. Lands certified through the American Tree Farm System amount to over 36 million hectares and represent a significant source of supply to many AF&PA companies.

SFI is planning upon becoming international through certification of forests according to its standards in Canada, Central and South America and other areas of the world (AF&PA, 2000).

13.5.5 CSA

Significant certification developments have taken place in Canada. The forestland certified under the Canadian Standards Association (CSA) Sustainable Forest Management System has more than doubled since May 1999 and in mid 2000 was approximately 480,000 hectares. This area is likely to increase with some of Canada's largest forestry and wood products companies – including Canfor, Interfor and Weyerhaeuser – aiming to achieve CSA certification (CSA 2000). Some companies have multiple certification standards accepted for the same forestland and CFPs.

However, the majority of certification work has been carried out according to ISO 14001 (table 13.5.1). In May 2000, ISO 14001 certificates had been issued to operations responsible for the management of almost 16 million hectares of forest, more than a six-fold increase when compared to May 1999.

TABLE 13.5.1

Certified forestland in Canada, 1999-2000

	Area covered (hectares)	
Standard	*May 1999*	*May 2000*
CSA	230,000	480,000
FSC	Not available	212,189
ISO 14001	2,550,000	15,960,000
Total	2,780,000	16,652,189

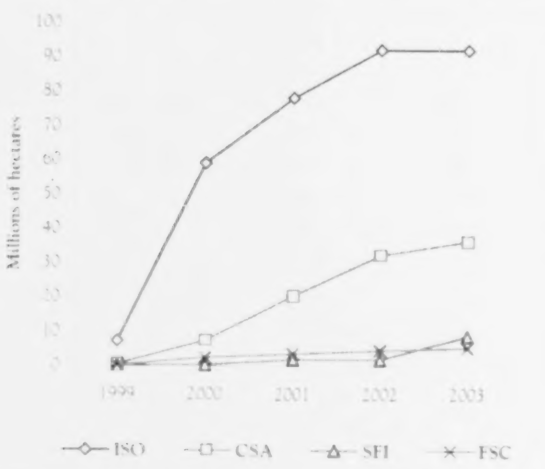
Sources: CSA 2000; and FSC 2000.

Approximately 75% of Canada's productive forestland [illegible] has been certified according to one or more schemes

2000) (graph 13.5.4). According to companies' forecasts, ISO 14001 will remain the dominant certification scheme used by forestry companies, followed by the CSA standard, the SFI and then the FSC standard. What the graph tends to hide is that there are several Canadian companies pursuing multiple certifications.

GRAPH 13.5.4

Potential certified forestland in Canada, 1999-2003



Source: Canadian Sustainable Forestry Certification Coalition, 2000.

TABLE 13.5.2

Summary of forest area certified in the ECE region

Country	*Hectares certified*	*Scheme*
United States	36.4 million	American Tree Farm System
	24.3 million	SFI
	1.8 million	FSC
Canada	15.7 million	ISO
	480,000	CSA
	22,000	FSC
Finland	13.5 million	Finnish Forest Certification System
Sweden	9 million	FSC
	1 million	Swedish PEFC
Norway	3.7 million	Living Forest/PEFC
Poland	2.7 million	FSC
Germany	1.5 million	German Forest Certification System
	120,000	FSC
United Kingdom	877,000	UKWAS/FSC
Denmark	36,000	FSC
Russian Federation	32,800	FSC
Ireland	11,000	FSC

Source: Forthcoming Status of Forest Certification in the ECE [illegible]

13.5.6 Other schemes

It is beyond the scope of the Review to list all the schemes developing in the ECE region, however they are well documented in the forthcoming *Discussion Paper* on the "Status of forest certification in the ECE region: Summer 2000 update". The *Discussion Paper* lists the following situation in the ECE region as of the summer 2000 (table 13.5.2). It is important to note that the scene is changing rapidly.

13.6 Mutual recognition between schemes

Concern has been expressed in several fora about the multiplicity of certification schemes which could confuse consumers, harm the image of wood and possibly legitimate widely differing standards of forest management, thus negating the usefulness of the whole exercise. Retailers too are concerned about the problems which could arise from stocking simultaneously products certified to different systems. They are also concerned that not enough certified forest products are available to satisfy their marketing strategies. The United Nations Intergovernmental Forum on Forests urged "countries, international organizations, including WTO and other interested parties to undertake as appropriate, further cooperative work on voluntary certification and/or labelling schemes, in line with the recommendations of Intergovernmental Panel on Forests, while seeking to enhance their international comparability and considering their equivalence, taking into account the diversity of national and regional situations, and to ensure adequate transparency and non-discrimination in the design and operation of such schemes, and are consistent with international obligations, so as to promote sustainable forest management and not to lead to unjustifiable obstacles to market access".

For all theses reasons, mutual recognition has become a common issue for discussion in certification fora. However, there are at present many strong opinions and vested interests that slow the process, as well as complex questions of sustainable forest management in concrete terms in particular regions.

Industry associations are concerned about mutual recognition between certification systems. The Confederation of European Paper Industries (CEPI) published a "Comparative Matrix of Forest Certification Schemes" in 2000 to "address concerns about a number of similar forest certification systems available, which could confuse consumers of forest raw materials and products; create trade barriers; and possibly fail to deliver the credibility promised" (CEPI, 2000). CEPI and the European Commission joined in a seminar in Brussels in

American Forest and Paper Association and its member organizations and the Canadian Pulp and Paper Association as well as other Canadian associations have initiated mutual recognition between different schemes for reasons similar to CEPI.

In the United States, the American Tree Farm System of the American Forest Foundation, which is a community of 66,000 non-industrialist private forest owners and the Sustainable Forestry Initiative of AF&PA, the forest industry associations have formally recognized each other's standards for sustainable forest management.

There have been efforts to resolve this issue at the national level. For instance, the United Kingdom has set up, after a widespread consultation process, a United Kingdom Forestry Standard and a United Kingdom Woodland Assurance Scheme (UKWAS), both of which are acceptable to all stakeholders. Thus, forests managed according to the United Kingdom Forestry Standard and certified through UKWAS could be eligible for both the FSC and the PEFC logos. Similar strategies are being implemented in some other European countries.

Lack of mutual recognition has delayed progress in certification. Some European wood products manufacturers that are buying certified sawnwood do not sell CFPs. Why? Because without mutual recognition they fear alliance to one label would be perceived as being against another system which may or may not have a label. To avoid jeopardizing their sales, they currently carry no label.

13.7 Conclusion

The market for CFPs is evolving rapidly and continues to create excitement in the forest and forest industry sector. While demand from final consumers is weak, retailers, wholesalers and manufacturers are finding advantages in producing and trading in CFPs, for example as a valuable public relations vehicle. Governments and trade associations see certification as a new communication channel to reach their public and clientele and to assure them about the purchase and use of forest products produced under sustainable forest management. It is not clear to what extent forest management practice has changed as a direct result of certification schemes, notably because their arrival has coincided with changes in the emphasis of forest policy in most ECE region countries.

However, there has been considerable progress from the situation of controversy and doubt which existed a few years ago. A number of national and international certification schemes are in place and certified products are at last reaching the final consumer in significant

Nevertheless, a number of important points are still in doubt, including the following:

- Ultimately, what proportion of forest products will be certified, the great majority or only a small part?
- will national and international systems continue to co-exist?
- will there be mutual recognition or convergence between major systems based on very different fundamental principles (e.g. ISO, FSC, PEFC)?
- who will bear the costs of certification in the future – consumers, wholesalers/retailers or the forest owners?
- will an established supply of certified forest products stimulate the use of wood, thanks to support from environmentally-aware consumers? Or will the higher costs reduce wood's competitivity?
- One certainty is that ECE/FAO will continue to monitor and analyse developments.

Note: A *Geneva Timber and Forest Discussion Paper* is anticipated to update the status of certification and the marketplace for CFPs in the ECE region in 2000.

Chapter 14

Tropical Timber Developments[1]

Highlights

- Tropical forest products markets recovered slightly in 1999 from the recession due to the Asian economic crisis of 1997 to 1998.
- A rapid expansion of Chinese imports, spurred by shortages of domestic raw material, coinciding with a fall in Japanese imports, has made China the world's largest tropical log importer.
- The trade in tropical secondary processed wood products, of which the majority is exported to the ECE region, is growing more rapidly than that of primary products.
- Tropical log and sawnwood prices recovered slightly from the decline caused by the Asian economic crisis although plywood prices remain lower. Teak prices, however, are rising steadily.
- Production and exports of reconstituted wood panels, particularly MDF, in tropical countries shot up and new capacity has been announced, principally in Asia.
- Indonesia continues to be by far the largest producer of tropical plywood, although its share has been declining since production in China, based on imported logs, exploded to 2 million m^3 in 1999.
- Tropical sawnwood production fell during the crisis, especially in Malaysia and Indonesia, and did not recover significantly in 1999.
- Log exports are decreasing as tropical timber producers add value domestically.

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Secretariat introduction

In the context of ongoing inter-organization cooperation between ECE/FAO and ITTO, this chapter was drafted by ITTO market intelligence staff, notably Steve Johnson and Michael Adams. (ITTO draws on ECE/FAO analysis for its own publications). In this way each organization is able to concentrate its resources in its area of comparative advantage while providing a comprehensive service to its clients. The ECE/FAO secretariat expresses its gratitude to ITTO and Drs. Johnson and Adams for their excellent contribution. The terminology, including names of countries, used in this chapter is that used in ITTO.

14.1 Introduction

The major factor affecting the global tropical timber sector (and the timber sector in general) in the past two years was the economic crisis which began in Asia in mid-1997 and which had resulted in negative impacts on all major markets by late 1998. Trade figures show a painful decline for all major products covered by ITTO in 1998. Although signs of economic recovery began to be seen in some Asian countries from late 1998, others remained mired in recession during 1999 and were only slowly recovering in 2000.

Figures for 2000 were not available to ITTO at the time of preparation of this *Review*. While it appears that overall timber consumption in some important markets (i.e. Korea, Japan) is rising this year, much of this increased consumption is of temperate species with tropical timber demand still far below mid-1990s levels and unlikely to recover to these levels.

14.2 Production

14.2.1 Logs

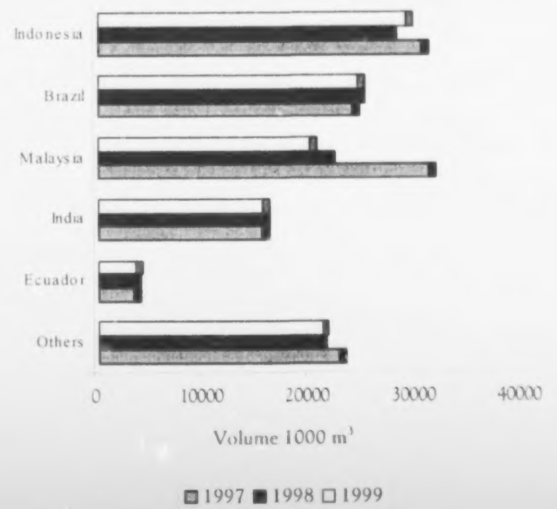
The production of tropical industrial roundwood ("logs") in ITTO producer member countries totalled 126.7 million m^3 in 1997. This total was down 1% from 1996 levels, with a further decrease of 11% to 113 million m^3 in 1998. Log production by ITTO producer member countries rose slightly to 113.4 million m^3 in 1999. Graph 14.2.1 shows ITTO's five major log producers for 1997 to 1999, ranked by 1998 production, as well as aggregate production by all other members. Of the top five, Brazil, India and Ecuador were stable or increasing during the period 1997 to 1999, whereas Malaysian and Indonesian production declined. Malaysian production has fallen from about 33 million m^3 in 1995 to 20 million m^3 in 1999, a reduction of almost 40% in just five years. This decrease reflects lower harvests in both Sabah and Sarawak, with the latter's harvests from its permanent forest estate now at the annual level of 9 million m^3 recommended by the ITTO Mission to Sarawak in 1990. Decreases in Africa and Asia accounted for the sharp decline in 1998 production, as harvests fell due to decreased demand associated with recession in many domestic and export markets.

Graph 14.2.1 illustrates the dominance of the top four tropical log producing countries (Indonesia, Brazil, Malaysia and India) which together comprised almost 80% of ITTO production in 1998 to 1999. Indonesian reports indicate that in recent years, the government has converted 3.4 million hectares of natural forests into plantations, 2.4 million of which are palm oil estates. Most of the cleared forests were classed as secondary degraded and reportedly did not contribute significantly to Indonesian log production. Indonesian log production is probably significantly higher than the estimate given here, however, with some sources estimating the illegal harvest to be almost equal to or even greater than the official figures of under 30 million m^3. Unfortunately, Indonesia, like Brazil and India, has never provided production figures to ITTO, necessitating the use of estimates.

Nine other ITTO producer members (Cameroon, Côte d'Ivoire, Myanmar, Gabon, Papua New Guinea, Peru, Ghana, Colombia and Republic of Congo) had log production exceeding 1 million m^3 in 1998. Six of these countries experienced an increase in production in 1999: PNG (20%), Colombia (19%), Republic of Congo (13%), Côte d'Ivoire (11%), Gabon (5%) and Ghana (5%). The other three countries experienced declines in

GRAPH 14.2.1

Major tropical log producers, 1997-1999



Source: ITTO, 2000.

production: Cameroon (26%), Myanmar (16%) and Peru (9%).

Two ITTO consuming countries possess significant tropical timber resources: Australia and China. Aggregate production from these sources for 1998 was estimated at 305,000 m^3, with the bulk of this coming from China's southern provinces of Hainan Island and Yunnan. Log production from these areas is consumed almost entirely domestically.

The regional breakdown of tropical log production amongst ITTO producer members is given in table 14.2.1; the Asia Pacific region produced 62% of ITTO members' tropical hardwood logs in 1998. Asia's share of ITTO log production was stable in 1999. Africa's share of production remained at about 9% in 1998 to 1999, and Latin American production remained at about 29%.

14.2.2 Sawnwood

Production of tropical sawnwood in ITTO producing countries totalled 33.2 million m^3 in 1998. This was down by 8% from 1997, with an increase of 2% to almost 34 million m^3 in 1999. Africa still suffers from weak infrastructure and environmentally demanding export markets that constrain major investments in wood processing, but production is gradually rising. Latin America increased its production by 1% in 1998, and by a further 2% in 1999. Asian production continued a steady decline, dropping 15% to under 18 million m^3 in 1998 before rising slightly to 18.4 million m^3 in 1999.

TABLE 14.2.1

Tropical forest products production, 1997-1999

(1,000 m^3)

	1997	*1998*	*1999*
AFRICA			
Logs	11,089	10,476	10,349
Sawnwood	1,998	2,164	2,245
Veneer	464	523	563
Plywood	290	295	299
ASIA PACIFIC			
Logs	84,141	70,258	70,202
Sawnwood	21,158	17,968	18,388
Veneer	1,486	1,078	1,153
Plywood	14,156	12,362	12,581
LATIN AMERICA/CARIBBEAN			
Logs	31,436	32,245	32,840
Sawnwood	12,882	13,054	13,319
Veneer	313	215	221
Plywood	1,510	1,508	1,329
TOTAL			
Logs	126,667	112,979	113,391
Sawnwood	36,038	33,186	33,952
Veneer	2,263	1,816	1,937
Plywood	15,957	14,165	14,208

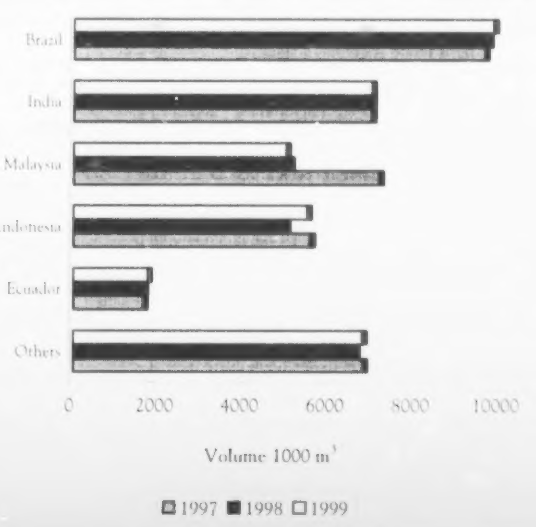
Source: ITTO, 2000.

Graph 14.2.2 shows the major ITTO producers of tropical sawnwood in the 1997 to 1999 period, ranked by 1998 production. Brazil (9.7 million m^3), India (7 million m^3), Malaysia (5.1 million m^3) and Indonesia (5 million m^3) were the major producers of tropical sawnwood in 1998. While production in Brazil and India was estimated to be relatively stable, Malaysian and Indonesian production dropped sharply in 1998. Malaysia became ITTO's fourth largest tropical sawnwood producer in 1999 after production slid to 5 million m^3 (almost 30% below the 1997 level) as log production fell and available logs were increasingly diverted to veneer and plywood mills. Ecuador is ITTO's fifth largest sawnwood producer, with about 1.7 million m^3 per year.

Six other countries (Côte d'Ivoire, China, Ghana, Peru, Cameroon and Japan) produced over 500,000 m^3 of tropical sawnwood in 1998. Production increased or remained stable in 1999 in all of these countries except Côte d'Ivoire. Thailand's production crashed by 71% in 1998 to about 113,000 m^3, falling further to only 80,000 m^3 in 1999. Thai sawnwood production has fallen due to economic problems in 1997 to 1998 and declining availability of log imports. The Asian region accounted for 54% of sawnwood production in producer countries in 1998 to 1999. Africa's share of ITTO production

GRAPH 14.2.2

Major producers of tropical sawnwood, 1997-1999



Source: ITTO, 2000.

remained at 7%, and Latin America's at around 38% during the same period.

Consuming countries produced 1.9 million m^3 of tropical sawnwood (from domestic or imported logs) in 1998, up 6% from 1997 levels, with most of the increase due to Europe and China. Further increases in China and a recovery of production in the Republic of Korea compensated for a decline in European production and led to a further 1% increase in 1999.

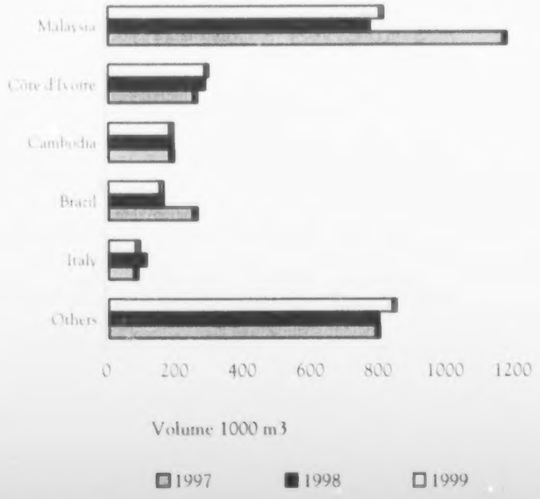
14.2.3 Veneer

Production of veneer in ITTO producing countries totalled 1.8 million m^3 in 1998, dropping nearly 20% from 1997, before rising 7% to over 1.9 million m^3 in 1999. The 1998 decrease was due largely to a drop in Malaysia's veneer production, which fell from almost 1.2 million to 760,000 m^3 between 1996 and 1998.

The Asian region produced almost 1.1 million m^3 of veneer in 1998, Africa produced 523,000 m^3 and Latin America produced 215,000 m^3. Aggregate production rose in Africa and Asia, and Latin America remained stable in 1999. The main ITTO veneer producers in 1997 to 1999 are shown in graph 14.2.3 - Malaysia's dominant (but declining) role is clear from this chart. Côte d'Ivoire is the second largest ITTO producer, with production rising to 285,000 m^3 in 1999. Cambodia (181,000 m^3 in 1998) overtook Brazil as ITTO's third largest tropical veneer producer in 1998. Five other ITTO producer members (Ghana, Cameroon, the Philippines, Republic of Congo and Indonesia) had veneer production of at least 50,000 m^3 in 1998, with Ghana, Republic of Congo and the Philippines reporting increased production in 1999.

GRAPH 14.2.3

Major tropical veneer producers, 1997-1999



Source: ITTO, 2000.

ITTO consuming countries produced 433,000 m^3 of veneer in 1998, down 3% from 1997 levels, with a further drop of 9% in 1999. Production of veneer in consumer countries in 1998 was split between the EU (59%), Japan (17%), and China and Taiwan Province of China (12% each). Japan, China and Taiwan Province of China consume virtually all of the veneer they produce, however, while about one-quarter of the total produced in Europe is re-exported, mainly to other European countries. EU production dropped from 254,000 m^3 in 1998 to 215,000 m^3 in 1999, mostly due to a decline in Italy (the largest EU producer). Japan's production of tropical veneer halved to 75,000 m^3 from 1998 to 1999 as its tropical veneer and plywood industries shrank together with log availability and the economy.

14.2.4 Plywood

Production of plywood in ITTO producing countries totalled 14.2 million m^3 in 1998. Plywood production in producing countries decreased by 11% in 1998 but was stable in 1999 at 14.2 million m^3. Plywood production by Indonesia, the top ITTO producer, dropped 11% from 1997 levels to about 7.8 million m^3 in 1998, increasing to 7.9 million m^3 in 1999. Malaysia's plywood production dropped by 12% in 1998 to 3.9 million m^3, the first annual decrease since Malaysian plywood production began increasing early in this decade. Production increased to 4 million m^3 in 1999. The Asian region produced 12.4 million m^3 of plywood in 1998 (about 88% of total producer member production), Latin America produced just over 1.5 million m^3 (11%) and Africa produced 295,000 m^3 (2%). The three regions consumed 9, 37 and 74% respectively of their production domestically in that year. Asia's low consumption/production ratio is due to the export-led industries of Malaysia and Indonesia. The low domestic utilization of plywood in Asia is an anomaly, with domestic markets consuming a majority or a near majority of all other primary tropical timber products in all three regions.

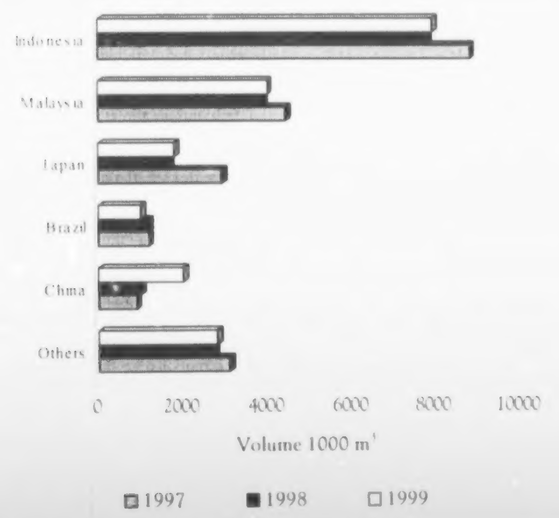
The main ITTO plywood producers in 1997 to 1999 are shown in graph 14.2.4. Indonesia's dominant but declining role is clear from this chart. Tropical plywood production in Japan plummeted by 42% in 1998 before increasing slightly in 1999. Brazilian production has been stable at about 1.2 million m^3 but declined in 1999 to 1 million m^3 as softwood plywood exports strengthened. Chinese production exploded to 2 million m^3 in 1999, the result of a sharp increase in tropical log imports and a corresponding decrease in plywood imports due to a ban on logging in China and reduced log import tariffs.

Taiwan Province of China, France, India and the Republic of Korea all produced at least 300,000 m^3 of tropical plywood in 1998. Thailand, formerly a major tropical plywood producer, reported a 77% drop to 44,000 m^3 as its economic troubles hit in 1997, with a further 11% reduction to 39,000 m^3 in 1998 to 1999.

ITTO consuming countries produced almost 4.2 million m^3 of plywood in 1998 (about 23% of total ITTO production), a 23% drop from 1997. ITTO consuming countries' production rebounded to 5.3 million m^3 in 1999, led by the jump in Chinese production. Most of the drop in 1998 consumer country production is accounted for by Japan and the Republic of Korea, both of which were in recession that year. Japan's tropical plywood production has fallen by 47% since 1995. Japanese domestic plywood production is now well below plywood imports, after 50 years of domestic production exceeding imports ended in 1994. Japanese plywood manufacturers are increasing the proportion of softwoods used in plywood production, as well as investigating lamination and other techniques to allow re-use of concrete form-ply. Several plywood manufacturers have established joint ventures for plywood and other panel production in producer countries. These factors, together with a depressed market and a declining supply of logs, mean that Japanese (and most other consuming countries') production of tropical plywood will continue to decline. Korean tropical plywood production has followed the same downward trend, dropping by 44% since 1995.

GRAPH 14.2.4

Major tropical plywood producers, 1997-1999



Source: ITTO, 2000.

14.2.5 Reconstituted panels

Substantial quantities of reconstituted panel products, particularly MDF, are now being produced in several tropical countries, primarily in Asia. For example, Malaysia now has the capacity to produce 1.2 million m^3 of MDF per year and exported 750,000 m^3 of this product in 1998, up from 200,000 m^3 in 1997. Brazil, Indonesia and Thailand have also seen large increases in their production and trade of reconstituted panel products in recent years. Many new plants in these and other countries are now operational or soon will be to meet the expected surge in demand for such products. There were close to 100 MDF and particleboard mills operating in tropical Asia in 1999, with more (including many joint ventures with companies from non-tropical countries) being announced regularly. While some expansion plans have been scaled back due to the regional crisis in 1997 to 1998, reconstituted panel products will become increasingly important as limits on the growth of plywood production are reached and as more countries move further into downstream processing and attempt to utilize available resources more efficiently. These panels will substitute for plywood and sawnwood in many uses, resulting in decreasing or slower growth in production of these traditional tropical timber products in many countries.

14.3 Exports

The composition of exports for 1997 to 1999 from the ITTO producing regions is shown in tables 14.3.1, 14.3.2, and 14.3.3. The contribution of logs to total tropical timber exports of ITTO producers (in terms of both value and volume in roundwood equivalent (rwe)) has fallen dramatically from over 60% in 1980 to less than a quarter in 1999. Only Africa continues to export a higher volume equivalent of logs than processed products, with log exports making up 42% of log production and 58% of total roundwood equivalent export volume in 1998. The Asia Pacific region is rapidly replacing log exports with the export of processed products, spurred by Indonesian plywood exports and Malaysian exports of sawnwood, veneer and plywood. Asian log exports made up 19% of total Asian export volume in 1998 (11% of log production). Latin American log exports are a small fraction of both production and total exports. Total roundwood equivalent export volume as a percentage of log production decreased from 12% to 8% in Latin America in the period 1997 to 1999, fell from 76% to 72% in Africa, but increased in Asia from 56% to 61%. Total ITTO producer member exports (rwe) fell 10% from 59.7 million m^3 to 53 million m^3 in 1997 to 1999, due to declining exports of logs, sawnwood and plywood by many countries.

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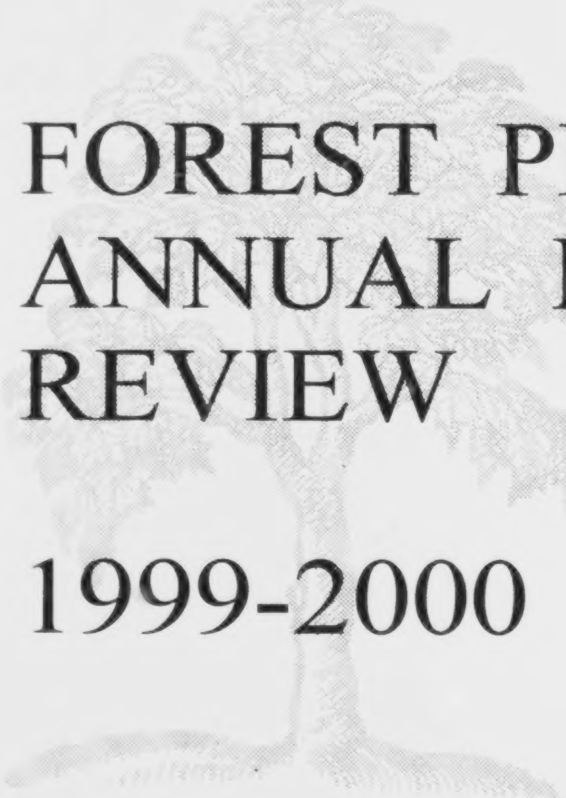

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ABSTRACT

The *Forest Products Annual Market Review, 1999-2000* provides general and statistical information on forest products markets in the UN-ECE region of Europe, North America and the Commonwealth of Independent States. The *Review* begins with a general overview of the forest products markets in the region followed by a description of the economic situation in the region. Five special chapters are included this year: "Effects of the December 1999 storms on European timber markets," "Poland's forest products markets," "China's forest products markets" "Secondary processed forest products markets" and "Engineered wood products – Production, trade, consumption and outlook." The developments in seven standard sectors are described for markets of: wood raw materials, sawn softwood, sawn hardwood, wood-based panels, paper and paperboard, certified forest products and tropical timber. For each sector, production, consumption and trade are considered and relevant material on specific markets is included. Tables included with the text present detailed information and annex tables contain further reference material.

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PREFACE AND ACKNOWLEDGEMENTS

The ECE/FAO *Forest Products Annual Market Review, 1999-2000* provides a statistical analysis and general information on forest products markets in the UN-ECE region, including Europe, North America and the Commonwealth of Independent States, for the period 1999 through mid 2000. The *Review* serves as a background document for the ECE Timber Committee's annual market discussions (9 and 10 October 2000). Furthermore it provides readers with comprehensive analysis on recent developments in the forest and forest product sector in the ECE region and its trading partners.

The *Review* begins with an overview of the forest products markets, followed by an appraisal of economic conditions influencing the ECE region, including construction sector influences. In-depth discussion of sector developments is included for roundwood, sawn softwood, sawn hardwood, wood-based panels, woodpulp, pulp, paper and paperboard, certified forest products as well as tropical timber markets. These are the sectors covered in the Committee's discussions.

Five special chapters are included in this year's *Review*: *Poland's forest products markets, China's Forest Products Markets, Secondary Processed Wood Products Markets and Engineered Wood Products – Production, Trade, Consumption and Outlook. Effects of the December 1999 Storms on European Timber Markets* describes the results in 2000 of catastrophic storms which felled nearly 200 million m^3 of roundwood in Europe's forests.

Poland's Forest Products Markets is the continuation of the *Review* series focusing on one ECE region country. We extend our gratitude to Drs. Wladyslaw Strykowski, Deputy Director, and Ewa Ratajczak, Head of the Wood Economics Department, Wood Technology Institute, Poland, for authoring this enlightening chapter.

China's Forest Products Markets, continues a *Review* series highlighting an important forest products trading country from outside the ECE region. Chinese imports of wood have multiplied to become the world's third wood importer. We thank Drs. Kunshan Shi, Fengming Lin and Mr. Zhisheng Xu, Chinese Academy of Forestry, for their noteworthy contribution.

Secondary Processed Wood Products was written by Mr. Pierre-Marie Desclos, a consultant in wood products. We express our gratitude to him for the attention he brings to the importance of further-processed products to the *Review* which has heretofore focused on primary products.

The last special chapter, *Engineered Wood Products – Production, Trade, Consumption and Outlook* describes the exciting new market outlet for products which are changing construction methods and being increasingly substituting for solid wood. We sincerely appreciate the outstanding work of Dr. Al Schuler, USDA Forest Service and Mr. Craig Adair, APA – The Engineered Wood Association, who will also contribute at the market discussions.

Drs. Steve Johnson and Michael Adams, International Tropical Timber Organisation, have again written an informative chapter for the *Review* on tropical timber markets. We thoroughly appreciate this co-operative effort with ITTO expertise.

Drs. Peter Ince and Henry Spelter, Forest Products Laboratory, USDA Forest Service contributed substantially to two chapters, pulp and paper and wood-based panels, respectively, adding new dimensions to these analytical chapters. We sincerely thank them for their assistance and look forward to future collaboration.

The primary information for this *Review* comes from the responses to a new questionnaire sent out jointly by the ECE Timber Section, the FAO Forestry Department, EUROSTAT and ITTO (see "data sources"). In addition to the primary data, the *Review* is based on a wealth of secondary data obtained though trade journals, trade associations, annual reports, and experts cited in the text. Readers' suggestions for additional sources of information are welcome.

Increasingly valuable market information is available on the World Wide Web and we thank the generous contributors who provide information for international use. A Market Information Service has been established and is being developed on the Timber Committee website at: http://www.unece.org/trade/timber/mis.htm and this *Review* may be found there along with the TIMBER database on which this publication is based.

The analysis included here was performed in a concentrated period due to delays in receiving and preparing statistics for the analysis. Members of the *Review* Team, both in the Timber Section and outside, are to be commended for their perseverance. We apologize to those readers who rely on a paper copy, or on a version in French or Russian, in preparation for the Timber Committee market discussions. The document was completed late which delayed translation, printing, duplication and distribution. We hope that those delegates who have the electronic version in

August 2000 find this method of distribution useful. We will also provide an executive summary, hopefully in 3 languages, on the website.

The *Review* will be complemented in October 2000 by the *Timber Bulletin* issue 6, *Forest Products Markets in 2000 and Prospects for 2001*, which will contain the results of the Timber Committee's market discussion. All statistics collected in the new joint ECE/FAO/EUROSTAT/ITTO questionnaire are presented systematically in issue No. 2, *Forest Products Statistics, 1995-1999*. The other issues of the *Timber Bulletin* are listed at the end of the *Review*.

Readers familiar with past *Reviews* will also notice that the appearance has been improved thanks to the design assistance of Ms. Marilyn Langfeld, Graphics Designer. The graphics look has also been improved thanks to Messrs. Antti Koskinen and Perttu Pohjonen, forest products marketing graduate students at University of Helsinki, who were interns with the Timber Section during production of the *Review*. Mr. Koskinen also developed the annex from the former standard apparent consumption s by adding definitions, lists of former special chapters, list of countries in the ECE region, product flow charts, a reader survey and a list of ECE/FAO publications. Mr. Pohjonen further developed a planning system for production of the *Review*. Our experience of engaging interns during the production of the publication, which has grown enormously in scope, has been extremely positive and prospective interns are encouraged to apply to work with the Timber Section.

Complementary data tables for wood raw materials and tropical timber may be found on the website version of the *Review*. Data tables for secondary processed wood products will be published in a forthcoming *Geneva Timber and Forest Discussion Paper* as well as appearing on the website with their Discussion Paper.

We welcome your feedback via the attached reader survey on this *Review* and its changes.

The *Review* was produced as a joint effort by 27 people. Ed Pepke led and coordinated the work. The individual chapters had the following principal authors: 1. Ed Pepke; 2. Kit Prins (drawing on the *Economic Survey of Europe* prepared by the ECE Economic Analysis Division); 3. Ed Pepke; 4. Wladyslaw Strykowski and Ewa Ratajczak (Poland); 5. Kunshan Shi, Fengming Lin and Zhisheng Xu (China); 6. Pierre-Marie Desclos (Italy); 7. Volker Sasse[1]; 8. Ed Pepke; 9. Ed Pepke; 10. Jorge Najera and Henry Spelter (United States); 11. Al Schuler and Craig Adair (United States); 12. Peter Ince (United States) and Kit Prins; 13. Eric Hansen, Keith Forsyth and Heikki Juslin (United States, United Kingdom and Finland); and 14. Steve Johnson and Michael Adams (Japan). Messrs. Antti Koskinen and Perttu Pohjonen (Finland) performed market research and produced all the graphics and the annex. Mr. Alex McCusker[2] produced the statistics with assistance on the database by Mr. André Sceia, consultant. Ms. Sefora Kifle assisted with price data preparation and other market research. Ms. Romi Chopra was responsible for preparation, formatting, integration and presentation of the text, tables and graphs and was aided at the end by Ms. Isabelle Hay[3]. This manuscript was completed on 10 August 1999. I would like to personally thank all members of the Team, whether in Geneva or far away, for their devoted efforts in producing this *Forest Products Annual Market Review*.

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[1] The Timber Section welcomes Dr. Volker Sasse, Forestry Officer, to the "Review Team". His primary responsibilities in the Section are in European Forest Sector Outlook Studies.

[2] Mr. Alex McCusker has joined the Timber Section as statistician and is a key member of the Team.

[3] We also welcome Ms. Isabelle Hay, Secretary, to the Section and the Team.

DATA SOURCES

The data on which the *Review* analysis is based are collected from official national correspondents[4] through the FAO/ECE/Eurostat/ITTO Joint Forest Sector Questionnaire. Within the 55-country ECE region, data for EU and EFTA countries are collected and validated by Eurostat and for other ECE countries by ECE/FAO Geneva.

Distributed in April and May 2000, the questionnaire requested data for 1998 and 1999. Revised in light of 1999 experiences, it: 1. redefined sawnwood (excluded further-processed sawnwood such as mouldings), 2. clarified treatment of MDF and OSB, 3. corrected cross references to the Harmonized System, 4. disaggregated paper and paperboard, and 5. introduced recovered fibre pulp. The new system has inevitably introduced some discontinuities into the data series, not all of which could be resolved before publication. Therefore in some instances data are not comparable with pre-1998 series. The secretariats are working with national correspondents, to whom we are grateful for their valuable assistance, to resolve discrepancies. National correspondents met in May 2000 to learn about and critique the revised questionnaire and follow-up meetings are envisaged.

The statistics for this *Review* are from a new, dynamic TIMBER database system which is currently under development. The system stores, retrieves, calculates and validates data and will also be used for production of the statistical *Timber Bulletins*. As the database is continually being updated, any one publication's analysis is only a snapshot of the database at that particular time.

The secretariat is grateful that correspondents provided actual statistics for 1999 and in the absence of formal statistics, their best estimates. Therefore all statistics for 1999 are subject to confirmation next year. The secretariat has made estimates, where necessary, to obtain product and regional totals. Trend-based formulas were used, rather than the former practice of simply repeating previous data. Therefore some totals in this *Review* differ from those in earlier *Reviews*, although in most cases the differences are not significant. Although estimates are distinguished from official statistics in the database, it was not possible to identify estimates in this *Review*. We intend to correct this and readers are asked to draw any inconsistencies to the attention of the Geneva secretariat. The statistics received for 1998 and 1999 are the most reliable and interesting part of the data set and this *Review* analysis focuses on the change between these two years.

Thus the database is in a state of permanent development. With our partner organizations and national correspondents, we believe strongly that the quality of the international statistical base is steadily improving for analysis of the forest products sector. Our goal is to have a single, complete, current database, validated by national correspondents, with the same figures available from FAO in Rome, Eurostat in Luxembourg, ITTO in Yokohama and ECE/FAO in Geneva. We are convinced that the data set used in the *Review* is the best available anywhere as of July 2000.

In addition to the official statistics received by questionnaire, trade association and government statistics are used to complete the analysis for 2000. A number of trade journals were used for supplementary information, as well as institutions and experts, including national correspondents. Most of these sources are cited in the text. The Internet has become a key source of information for producing this *Review*.

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[4] Correspondents are listed in the companion *Timber Bulletin*, "Forest Products Statistics, 1995-1999".

CONTRIBUTORS TO THE PUBLICATION

The secretariat would like to express its sincere appreciation for the information received from the following people in preparation of the *Forest Products Annual Market Review*. The base data for the *Review* were supplied by country statistical correspondents, who are acknowledged by name in the companion issue of the *Timber Bulletin* "Forest Products Statistics, 1995-1999." We regret any omissions.

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EXPLANATORY NOTES

"Apparent consumption" is calculated by adding a country's production to imports and subtracting exports. Apparent consumption volumes are not adjusted for levels of stocks because all countries cannot report stocks.

"Net trade" is the balance of exports and imports and is positive for net exports, i.e. when exports exceed imports, and is negative for net imports, i.e. when imports exceed exports. Trade data for fifteen European Union countries include intra-EU trade, which is often estimated by the countries.

The term "central and eastern Europe countries", used exclusively for presentational convenience, includes Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, The former Yugoslav Republic of Macedonia and Yugoslavia.

For the first year, European totals include the Baltic countries of Estonia, Latvia and Lithuania, which has increased European totals from previous *Reviews*.

The term "softwood" is used synonymously for "coniferous." "Hardwood" is used synonymously for terms "non-coniferous" or "broadleaved" wood. More definitions appear in the annex.

SYMBOLS AND ABBREVIATIONS USED

-	nil or negligible
..	not available
$	United States dollar unless otherwise specified
C$	Canadian dollar
CIS	Commonwealth of Independent States
ECE	Economic Commission for Europe
EFTA	European Free Trade Association
EQ	equivalent of wood in the rough
EU	European Union
EWP	engineered wood products
FOB	free on board
GDP	gross domestic product
IMF	International Monetary Fund
kph	kilometres per hour
m^2	square metre
m^3	cubic metre (solid volume of roundwood or processed product)
m.t.	metric ton
N.A.	Not applicable
NIEs	Newly industrializing economies
OPEC	Organization of Petroleum Exporting Countries
SPWP	secondary processed wood products
sq	square
USDA	United States Department of Agriculture
WWF	World Wide Fund for Nature

Chapter 1

Overview of Forest Products Markets in 1999 and early 2000

Highlights

- Consumption of forest products in the ECE region once again reached record levels in 1999.
- Strong economies in Europe and North America in 1999 and early 2000 resulted in record production and trade although there were signs of slower growth ahead.
- The Commonwealth of Independent States had not recovered from the 1998 Russian economic crisis and although domestic consumption of sawnwood fell, it rose for panels and paper, while exports of most products increased.
- Prices were weak for some products and sub-regions, for example sawn softwood and panels in North America where new capacity outstripped the rise in consumption.
- Central and eastern European countries exported more roundwood and primary-processed products as well as increased exports of value-added products such as furniture.
- Life-cycle analysis for wood-based panels confirmed continued market penetration for OSB and MDF, moderate growth for particle board and stagnation for plywood in North America.
- The ECE region has the majority of the world's certified forestland and new certification systems for sustainable forest management are being implemented with possibilities for mutual recognition between systems. With the new certificates, the demand for certified products is less than the potential supply.
- Windstorms in December 1999 felled 3 years' worth of timber in Europe causing chaos in forests and forest products markets for roundwood in early 2000.
- China is rapidly increasing forest products imports with important benefits for ECE region exporters.
- Japan began recovery from the 1997/1998 Asian economic crisis and imports from the ECE region improved.

1.1 ECE region developments

Overall in the ECE region (Europe, North America and the CIS), forest products markets were at record levels in 1999 due to strong domestic and export demand for primary wood products (roundwood, sawnwood, panels, pulp and paper). Residential and non-residential construction was at high levels in North America and Europe in 1999 and early 2000, resulting in strong markets at the beginning of the millennium. Recovery from the 1998 economic crisis in the Russian Federation persisted into 1999, however, depending on the product, either lower consumption or higher production led generally to greater exports.

Consumption of forest products in North America rose sharply in 1999, by over 5% for sawnwood, panels and paper and paperboard, raising the roundwood required by 38.7 million m^3 (table 1.1.1). Sawnwood consumption moved up to 731 million m^3 and 56 million m^3 worth of panels were consumed for construction and non-structural uses. Sawnwood trade between Canada and the United States was at record levels in 1999, as were imports to North America. The strong US dollar weakened export opportunities in some markets, but not in all products. Paper and paperboard consumption increased to new records at 104 million m^3.

European economies were generally stronger in 1999 and forest products markets were at record consumption. Sawnwood consumption rose by over 3% to 105 million m^3 and trade within Europe was high as well as exports to Asia and the United States. Paper and paperboard consumption rose too, to a record 105 million m^3. Panels consumption, boosted by structural and non structural uses rose by half as much, 1.5%, to 52 million m^3. Prices remained depressed in 1999, but they have somewhat strengthened in 2000.

Production of sawnwood in the Russian Federation fell to 13 million m^3, and as domestic consumption fell even more, greater volumes were exported. Consumption of panels rose but did not overcome the drop in 1998. Paper and paperboard consumption rose most, by 29.3% to 3 million m^3, moving back near the level in 1993.

Removals of roundwood from forests escalated in 1999 but remained well below annual growth as determined by the recently published study by the Temperate and Boreal Forest Resources Assessment.[1] The study shows higher levels of removals would still be possible under sustainable forest management.

Japan and some other countries in Asia began recovering from the 1997 and 1998 economic crisis. The Chinese demand for wood products is growing fast due to a combination of factors, especially the decrease domestic harvests for flood control and the increasing consumption consummate with opening borders and a rising standard of living for the 1.3 billion population. Exporters from across the region capitalised on these opportunities.

The export markets outside of Europe have become especially important in 2000 in light of the December 1999 windstorms which toppled 193 million m^3 of roundwood in France, Germany and Switzerland (as well as other countries). There were multiple market consequences of this disaster for the countries involved: 1. a sudden, enormous supply, equivalent to 2 to 3 years annual harvest; 2. the disruption of forest management plans in the damage zone and postponement of those outside the zone; 3. the collapse in roundwood prices, but not necessarily further processed product prices; and 4. the panic to remove usable wood before destruction by insects, disease or fire. In mid 2000, thanks in part to governments' actions, and due primarily to a strengthened solidarity in the sector, many countries struck by the storms had restored order to forests and forest products markets. Nevertheless, the effects of the storms will have serious repercussions for years in the hardest hit communities and regions.

Central and eastern European countries exhibited strong export orientation for roundwood and sawnwood and were making strides to develop value-added processing such as furniture manufacturing.

In North America the number of houses built was at near record levels, even though mortgage rates began to rise in 1999. Constructed essentially from wood, i.e. sawnwood and panels, the 1.7 million homes in the US, plus another 150,000 in Canada also meant a strong demand for millwork, mouldings and furnishings. These in turn necessitated increased forest removals, up slightly to 686 million m^3. However this is below levels of the late 1980s when the US exported more wood.

The decline in US exports and the concurrent rise in production were not satisfactory to meet demand and imports of roundwood, sawnwood, pulp and paper rose. European sawnwood is becoming more prevalent in the US; however Canada maintains a 95% market share.

The paper and paperboard sector in Europe and North America saw strong growth in demand, and higher levels of production and consumption. Pulp's share of raw material used for paper and paperboard continued to decline to the profit of recovered paper and non-fibre raw materials such as coatings. Companies continued to merge and expand across regions, creating several truly global players. For both paper and pulp, profitability was restored as capacity growth was restrained, bringing up the capacity utilisation rate, and influencing prices upwards.

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[1] *Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand, 2000 (ECE/TIM/SP/17).*

The wood-based panels market is dynamic and when combined with engineered wood products the future of wood products markets becomes clearer. New product developments with end-use orientation are being reconstituted from flakes, shavings, veneers, fibres and other residues and by-products. These new composition products are in panels or glued into beams for uses in construction, materials handling, furniture and other uses.

Consumption of panels and engineered wood products is at record levels in North America and Europe but with capacity being installed faster than demand, the result was weak prices in Europe and volatility in North America. MDF is a product which is replacing solid wood in furniture and mouldings, and which is constantly finding new applications. However like other panels, MDF capacity is high and prices are weak. Well established in North America, OSB does not have the same construction applications in Europe, although different applications and new market niches are being developed.

TABLE 1.1.1

Apparent consumption of sawnwood, wood-based panels and paper and paperboard in the ECE Region, 1996-1999

						Change 1998 to 1999	
	Thousand	*1996*	*1997*	*1998*	*1999*	*Volume*	*%*
EUROPE							
Sawnwood [b]	m^3	90,891	97,339	101,872	105,026	3,154	3.1
Wood-based panels [c]	m^3	43,167	46,462	51,437	52,194	757	1.5
Paper and paperboard	m.t.	73,463	79,211	82,470	85,322	2,852	3.5
Total	m3 EQ [a]	463,533	498,607	524,868	540,795	15,926	3.0
RUSSIAN FEDERATION							
Sawnwood [b]	m3	18,412	16,753	14,731	12,558	-2,173	-14.8
Wood-based panels [c]	m3	2,228	3,134	2,560	2,866	306	11.9
Paper and paperboard	m.t.	2,212	2,353	2,128	2,751	623	29.3
Total	m3 EQ [a]	40,522	39,796	34,880	34,003	-876	-2.5
NORTH AMERICA							
Sawnwood [b]	m3	161,892	167,860	171,634	181,416	9,782	5.7
Wood-based panels [c]	m3	48,019	48,628	52,794	55,615	2,821	5.3
Paper and paperboard	m.t.	91,608	86,306	98,332	103,789	5,457	5.5
		N/A	N/A	N/A	N/A		
Total	m3 EQ [a]	646,409	638,957	692,431	731,095	38,664	5.6

[a] Equivalent of wood in the rough

[b] Excluding sleepers

[c] Excluding veneer sheets

Source: ECE/FAO TIMBER database, 2000.

1.2 Trends in forest products markets

Due to socio-economic changes, for example demographic changes, a number of structural changes are occurring in forest products markets in the ECE region. Markets are continuing to become more global, despite rising transportation costs, and wood raw materials are being shipped considerable distances between continents.

With increasing competition a stronger market orientation is becoming evident across the ECE region as primary forest product producers seek to diversify from commodity markets and meet market requirements. The result is sales offices in key export country destinations or, conversely, foreign investment in timber-rich areas. An example of the former would be Swedish sales offices in Japan and examples of the latter would be Malaysian investment in forests and sawmills in Russia, or Japanese sawmills and panel plants in Europe and North America.

Part of the market orientation is producing new products from wood to meet more exigent specifications or to improve on current uses of wood. An example is the substitution of wood I-beams for solid-wood joists and rafters. Combination of solid wood and composite products into engineered wood products enables serving new functions, as well as improvement on existing applications.

Another trend is the increased communication between the forest and forest industries sector and the public. Certification of sustainable forest management is established and thus far has been most beneficial in the ECE region as a tool to communicate companies' and governments' assurance that forest products are being sustainably produced. While availability of certified forest products is increasing, and the potential supply is increasing faster, in general in the region consumers are not demanding CFPs.

Industry is restructuring in line with global markets and marketing and the number of players is dropping as production capacity is rationalised, especially in the pulp and paper sector. Large, multi-national companies can achieve greater efficiencies in marketing, including distribution channels. Fewer players have an impact on prices, both for raw materials and final products.

Inventory carrying costs are continually minimised through just-in time ordering. Sometimes price volatility occurs when stocks cannot buffer price rises.

More extensive and timely market information is available, both in print and in electronic form over the Internet. Electronic communication has accelerated price comparisons and ordering. Electronic marketplaces are no longer the future, but are well established.

The promotion of wood as a natural, renewable, environmentally-sound choice is accelerating in countries, corporations and internationally. Nevertheless wood products and paper-based packaging remain under threat from substitution by plastics, steel, aluminium and concrete. Companies are finding that their environmental policies are an important competitive advantage in certain marketplaces.

The emphasis on new construction sometimes overshadows the important demand for wood and wood products for the repair and remodelling markets. Whether through professionals or through DIY stores, the values of wood materials going into renovation and improvement are often equivalent to the proportion for construction.

1.3 Timber Committee forecasts

The Timber Committee forecast production and trade of forest products in 1999 and 2000 at the September 1999 session. In retrospect the projected apparent consumption for 1999 was low for Europe and North America and the predictions for 2000 have been surpassed.[2] In early 2000 the trends were much stronger than envisaged and the annual totals will depend on continued strength in economies – an uncertainty in mid 2000. The Committee predicted the direction of the decrease in Russian Federation consumption of sawnwood, but not the magnitude. However the Committee foresaw a rise in sawnwood exports and a further increase was forecast for 2000. An anticipated growth in 1999 in panels' apparent consumption was correct and another climb was foreseen for 2000.

---

[2] Direct comparison between forecasts and the actual statistics is difficult because of changes in definitions.

Chapter 2

Economic Factors Affecting Forest Products Markets

Highlights

- During 1999, fears that the world economy would slide into recession receded, and in the second half of the year, business confidence, real activity and expectations for 2000 all improved steadily.
- At end 1999, the western European economies were growing at an annual rate of about 3.5%, with similar growth expected for 2000.
- Western European construction rose by 3% in 1999, and further growth, but at a lower rate, is expected for 2000 and 2001.
- The United States economy continued to expand, for the 108th consecutive month, the longest upswing on record. For the third year in succession, growth was over 4%.
- The United States housing boom continued in 1999 and early 2000. However there are signs that the end of the boom may be in sight as starts fell, quite significantly, in March and May 2000.
- Eastern Europe grew slower than forecast, by 1.4% and the Baltic countries went into recession.
- The Russian economy grew by more than 3%. Construction output rose by 5.4%, the first rise after three successive falls.
- The Japanese economy fell in both the third and fourth quarters of 1999, despite fiscal measures to stimulate performance.
- Japanese housing starts stagnated in 1999 at a relatively low level.

2.1 General economic developments

The analysis below is taken from the *Economic Survey of Europe*, number 1 of 2000, prepared by the Economic Analysis Division of the secretariat of the Economic Commission for Europe. The full text of the *Survey* is available from the ECE website.

2.1.1 Global overview

The negative effects of the financial crises in Asia in 1997 and Russia in 1998 were still depressing real economic activity in much of the ECE region, including international trade, until the early months of 1999. However, during 1999, fears that the world economy might slide into recession receded as stability was restored to the international financial markets, helped to a large degree by the temporary loosening of monetary policy in the United States, harsh adjustment measures in Asia and other developing countries, and by the continued strong growth of the United States economy.

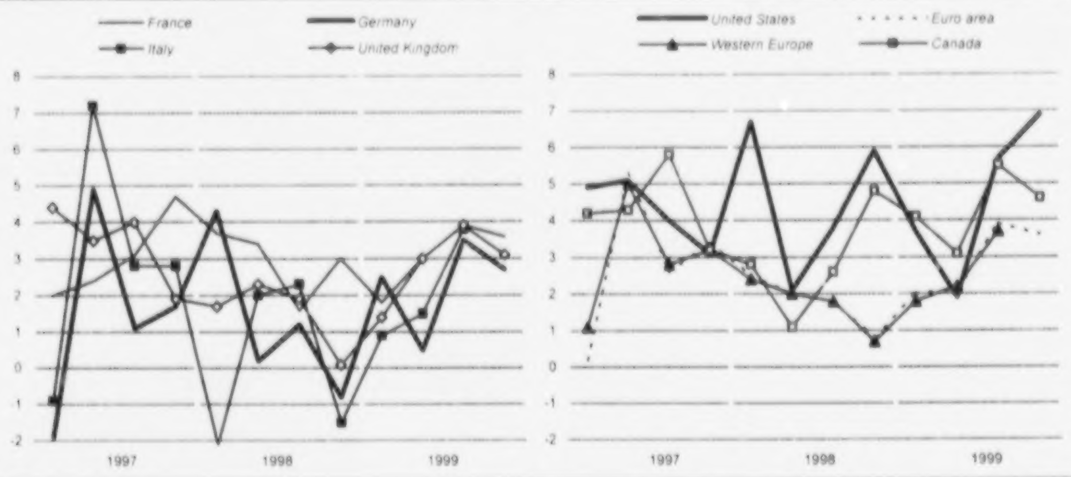
By the middle of 1999 the situation in most parts of the world economy had stabilized and in the second half of the year business confidence, real activity and expectations for 2000 were all improving steadily. In western Europe economic growth received a strong boost from exports to the rest of the world, not least from the strong import demand of the United States economy, and, by the third quarter, GDP was rising at its highest annual rate since before the Asian crisis. In the transition economies of central Europe the worst effects of the Russian crisis were receding in the second half of 1999 and they were starting to benefit from the revival of domestic demand in western Europe. In Russia there was a significant recovery in output for the first time in a decade, and, although the extent to which the underlying factors provide a basis for sustainable growth over a longer period is uncertain, this has nevertheless had a positive effect on most other members of the CIS.

These widespread improvements in the economic situation are not reflected in the *annual* figures for performance in 1999, which for the most part show a marked deterioration on those for 1998, but they are seen in the quarterly and monthly indicators for late 1999 and early 2000 and, above all, in the current forecasts for 2000 (graph 2.1.1). For the first time since 1990, average GDP growth in western Europe is likely to exceed 3%; for the transition economies of eastern Europe growth should return to an average of 4% or more in 2000, and the Baltic economies should emerge from recession with an average growth rate of some 3%. After a much better than expected outcome in 1999, growth is also likely to continue in Russia and the other CIS countries, although here the prospects are much more problematic and uncertain. This much improved outlook for the European economies is also set against a background of more optimistic forecasts for other parts of the world economy and, not least, for continuing growth in the United States

GRAPH 2.1.1

Quarterly changes in real GDP in western Europe and North America, 1997-1999

(Percentage change over preceding quarter, seasonally adjusted at annual rates)



Note: Data for western Europe cover 13 countries (Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom). Data for the euro area exclude Ireland and Portugal.

Source: National statistics.

where, although a slowdown is currently forecast, GDP is still expected to increase by some 4% in 2000.

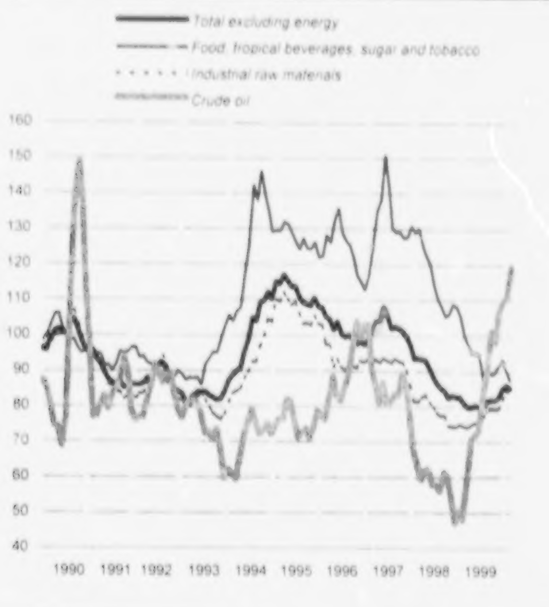
However, it is important to stress two points: first, there is always a distribution of risk surrounding any forecast and although the *Survey* believes the balance is now more favourable for growth in Europe this does not mean that the downside risks are negligible; the possibility of a crash in overvalued equity prices in the United States is a serious risk to the current outlook, and there are uncertainties over the course of oil prices and of monetary policy in the EMU. Secondly, not all the economies of the region enjoy the same prospects and there are especially large differences among the transition economies. In particular much of the region of south-east Europe is still beset by severe structural problems and the consequences of several armed conflicts which have made the process of transition to a market economy much more difficult than in central Europe. The fact is that for the past decade these countries, the poorest in Europe, have continued to fall further behind both western and central Europe rather than catch up.

In the international oil markets there was a sharp rise in the price of crude oil in 1999, which has continued in early 2000 (graph 2.1.2). This was, in general, the main source of upward pressures on the still relatively moderate rates of inflation in the industrialized countries. In early March 2000, the spot price of Brent crude was around $30 per barrel, compared with $9.9 in early February 1999. The March price was the highest level since the 1991 Gulf war. This surge reflects in the main the adherence to the supply quotas agreed by the oil exporting countries in March 1999 and intended to reverse the depressing effect on prices of excess supply and abundant stocks. The more rapid rate of economic expansion in the course of 1999, moreover, led to an increase in oil demand, which was only partly met by the available new supply. As a result, oil stocks in the industrialized countries in the final quarter of 1999 fell at their highest rate in a decade. When measured in real terms (i.e. relative to the unit value index of manufactured exports of the developed market economies), the price of oil in early 2000, however, was still some 40% below the average during 1980 to 1985, the last sustained period of high real oil prices. More recently there have been growing concerns about the potential inflationary effects of further increases in the price of oil and calls by industrialized countries for oil producers to raise output. The more rapid expansion of global economic activity has also tended to support the prices of industrial materials, which started to rise in the second half of 1999, although for the year as a whole there was still a small decline. Persistent excess supply has led to further sharp declines in the prices of agricultural commodities, notably food and tropical beverages (coffee, tea and cocoa).

GRAPH 2.1.2

World commodity prices, January 1990-February 2000

(Indices, 1990=100)



Note: Indices calculated on the basis of current dollar prices.
Source: Hamburg Institute for Economic Research (HWWA), 2000.

The millennium date change (the so-called Y2K problem) did not have any significant adverse impact on macroeconomic developments in early 2000.

In *Latin America*, real GDP stagnated in 1999, the first time in the 1990s that the region as a whole did not experience positive economic growth. Nevertheless, even this performance was still better than expected earlier in the year and it is largely accounted for by the moderate recovery in Brazil, where real GDP rose by about 0.5% compared with 1998.

In the five *Asian emerging markets* most directly affected by the financial crisis of 1997, there was an unexpectedly strong recovery from the depression of economic activity in 1999. The cyclical upturn partly reflects the global recovery in demand for electronic products and partly the impact of expansionary economic policies. Also, progress in structural reforms, such as the rehabilitation of the financial sector, and the strong yen have contributed to this performance. In the Republic of Korea, real GDP rose by 10% in 1999, more than offsetting the decline of 5.8% in 1998. Aggregate output increased by some 5% in Malaysia and Thailand and by 3% in the Philippines. In contrast, Indonesia remained mired in deep crisis. Outside these five economies, there was robust growth in Taiwan Province of China and Singapore. In China, expansionary economic policies helped to maintain economic growth at a high rate of some 7% in 1999.

In *Japan*, hopes that the economy might be on the way towards a gradual, sustained recovery have been disappointed. Real GDP fell in both the third and fourth quarters of 1999 (over the preceding quarters): technically, the economy has therefore moved back into recession. This occurred despite massively expansionary fiscal packages and, since February 1999, a zero-interest rate policy of the central bank. The strong yen restrained exports, but there was also a conspicuous weakening of private consumption and public investment in the final quarter of 1999. For the year as a whole, real GDP rose by only 0.3%. There are also mounting concerns about the rapid deterioration of the public finances: a succession of large budget deficits have led to a significant rise in the general government's gross financial liabilities, which corresponded to about 105% of GDP in 1999.

2.1.2 Market economies of western Europe

The economic prospects for western Europe now appear to be better than at any time in the last decade. In the second half of 1999 the region finally shook off the sluggishness of activity which had marked 1998 and early 1999, and by the third quarter (and probably the fourth as well) GDP was growing at an annual rate of around 3.5% (table 2.1.1). Exports to the rest of the world had helped the process of recovery earlier in the year, but given the high levels of interdependence of the European economies this quickly had multiplier effects on demand throughout most of the EU. Business and consumer confidence strengthened considerably. Monetary policy has been expansionary and relatively low levels of interest rates have helped to boost consumer expenditure and investment. Rising levels of employment and gains in real income, boosted in some countries by rising asset values, have also supported confidence and consumer spending. Business fixed investment was also rising through 1999, with above average increases in machinery and equipment – better prospects for sales, lower costs of financing, better profits, and perhaps some stimulus from the need to prepare for the Y2K problem, were the main influences behind this improvement.

The improvement in output led to rising levels of employment during the year, by some 1.5% on average between the fourth quarters of 1998 and 1999. The level of unemployment in western Europe has also fallen, from 9.1% at the end of 1998 to 8.4% in the last quarter of 1999 (9.6% in the euro area). Despite a wide range of schemes to reduce joblessness among particular groups, the problem of youth unemployment remains acute (16.8% in the EU at the end of 1999) and the long-term unemployed, nearly one half of total unemployment in the EU, have yet to benefit significantly from the cyclical upturn in activity.

Despite the rise in import prices in 1999, due to higher oil prices and the weakness of the euro, the impact on west European rates of inflation has been quite modest. Intense competition has forced some absorption of higher producer prices in lower margins, but there have also been offsetting price falls for other products and in services where liberalization has been important. Labour cost pressures also remain mild, and although the annual

TABLE 2.1.1

Annual changes in real GDP in western Europe and North America, 1997-2000

(Percentage change over previous year)

	1997	*1998*	*1999*[a]	*2000*[b]
Western Europe	2.8	2.7	2.0	3.2
4 major countries	2.1	2.3	1.9	2.9
France	2.0	3.4	2.7	3.5
Germany	1.5	2.2	1.5	2.8
Italy	1.8	1.5	1.4	2.5
United Kingdom	3.5	2.2	2.0	3.0
17 smaller countries	4.1	3.4	2.4	3.5
Austria	1.2	2.9	2.2	2.8
Belgium	3.5	2.7	2.3	3.2
Cyprus	2.5	5.0	4.5	4.1
Denmark	3.1	2.7	1.3	2.0
Finland	6.3	5.0	3.5	4.5
Greece	3.4	3.7	3.3	3.7
Iceland	5.3	5.1	6.0	2.9
Ireland	10.7	8.9	8.3	7.5
Israel	2.9	2.2	2.0	3.5
Luxembourg	7.3	5.0	5.1	4.3
Malta	4.8	3.1	4.8	4.8
Netherlands	3.8	3.7	3.5	3.5
Norway	4.3	2.1	0.8	2.7
Portugal	3.5	3.5	3.1	3.3
Spain	3.8	4.0	3.7	3.7
Sweden	2.0	3.0	3.8	4.0
Switzerland	1.7	2.1	1.7	2.5
Turkey	7.5	2.8	-2.3	4.6
North America	4.5	4.2	4.1	4.0
Canada	4.0	3.1	4.2	3.9
United States	4.5	4.3	4.1	4.0
Total above	3.6	3.4	3.1	3.6
Japan	1.6	-2.5	0.3	0.7
Total above, *including Japan*	3.3	2.5	2.6	3.1
Memorandum items:				
European Union	2.6	2.7	2.3	3.1
Euro area	2.3	2.8	2.3	3.1

Note: All aggregates exclude Israel. Growth rates of regional aggregates have been calculated as weighted averages of growth rates in individual countries. Weights were derived from 1991 GDP data converted from national currency units into dollars using purchasing power parities.

[a] Preliminary estimates or forecasts.

[b] Forecasts.

Source: OECD national accounts; national statistics and national economic reports, 2000.

rate of inflation in the euro area in February 2000 was 2%, most forecasters expect the impulse from higher import prices to die away during the coming months.

Against this general improvement in the economic indicators economic growth in western Europe in 2000 is expected to average slightly more than 3% and, with most of the revisions tending to raise rather than lower the national forecasts, the outcome could perhaps be closer to 3.5%.

The acceleration in economic activity was broadly based across countries, but there was notably a marked simultaneous strengthening of economic activity in the four major economies. Within the *euro area*, the degree of cyclical divergence between the smaller member countries and the larger ones diminished somewhat in the course of 1999

Viewed from the supply-side, the current cyclical upturn reflects the reversal of the weakening of industrial activity that occurred in the second half of 1998. In fact, output had fallen sharply in the final quarter of 1998, largely reflecting the direct and indirect effects of the crises in Asia and other emerging markets on west European exports. But activity started to recover after the first quarter of 1999, with export demand stabilizing and, in most countries, strong growth of consumption and fixed investment, and the rundown in stocks coming to an end. For the year as a whole, industrial output rose, but only by 1% (against 3.3% in 1998) and manufacturing output increased by 1.3%. The decline in manufacturing capacity utilization rates since late 1998 started to be reversed in the final months of 1999 when, in fact, they were close to their long-term (1989 to 1998) average.

Viewed from the demand side, the recovery in 1999 was largely export-led. But domestic demand proved, in general, to be quite resilient to the deteriorating economic environment in the second half of 1998. Exports were supported by the improved price competitiveness deriving from the strong dollar and the revival of domestic demand in emerging markets. Exports also benefited from the stronger than expected economic growth in the United States and Canada. The strengthening of demand from outside the European region then fed through to domestic demand which, in turn, stimulated intra-European trade. This kind of virtuous circle is well known from previous upswings. Although increased exports and strengthening domestic demand led to rising imports, changes in real net exports supported economic activity after the first quarter of 1999. For nearly two years net exports, on average, had been a drag on domestic activity. In addition, domestic demand continued to be supported by the expansionary stance of monetary policy and the increases in income due to rising levels of output and employment. Low interest rates stimulated the demand for interest-sensitive expenditure items, such as consumer durables and investment goods, including housing.

For 1999 as a whole, private consumption was the mainstay of economic growth in western Europe. Household expenditures rose on average by 2.5% compared with 1998, but consumer spending was more buoyant in a number of smaller economies. The general background to this was a marked rise in consumer confidence to its highest level in the 1990s. Confidence was bolstered by the improving situation in the labour markets and, partly related to this, to gains in real income in a context of continued moderate inflation. Household spending was also stimulated by rising net wealth due to increases in the prices of shares and, in some countries, real estate. This wealth effect, together with favourable financing conditions, led many households to finance purchases of “big ticket” items by means of borrowing. In many countries falling savings ratios supported private consumption in 1999. Government consumption expenditures rose somewhat more strongly in 1999 than in 1998, a reflection of reduced pressure for fiscal consolidation.

Fixed investment strengthened in the course of 1999, although for the year as a whole the increase was only about 4¼%, down from 5.5% in 1998. There was a somewhat stronger growth of expenditure on machinery and equipment than on construction, but it is noteworthy that construction – both residential and public infrastructure – picked up in 1999, after rather sluggish growth in the two preceding years. Apart from favourable financing conditions, business investment was supported by improved sales expectations and relatively high and rising capacity utilization rates, all factors which have tended to increase profitability. To some extent business investment in machinery was also stimulated by the need to ensure Y2K compliance of electronic data processing (EDP) equipment. Changes in inventories had little impact on economic activity in 1999.

In the euro area, economic conditions generally remained buoyant in most of the smaller economies (Finland, Ireland, Luxembourg, Netherlands, Portugal, Spain) with strong domestic demand offsetting the temporary weakness of exports. These countries had rates of economic growth significantly above the European average and it is evident that they are at a more advanced stage of the business cycle than France, Germany and Italy, with attendant risks of overheating. But the underlying strength of the business cycle also continued to differ among the three larger economies, with a stronger upturn in France compared with the other two countries. This reflects, to a large degree, the asymmetric trade effects of the Asian crisis, which hit France much less than Germany and Italy. To some extent, the current boom in Ireland, Portugal and Spain also reflects the considerable monetary stimulus that these economies received in the run-up to EMU in 1998, when there was a substantial reduction in interest rates This was accentuated by the further lowering of interest rates by the European Central Bank in April 1999, although it was hardly appropriate for these countries in view of their cyclical position. (The same holds mutatis mutandis for Finland and Luxembourg.)

Outside the euro area, the six-year expansion in the United Kingdom ended in the final quarter of 1998, when real GDP stagnated compared with the preceding period. But fears that the economy might move into recession did not materialize; instead, economic activity gathered considerable momentum in the course of 1999, provoking a renewed tightening of monetary policy in the second half of 1999, which continued in early 2000. Among the remaining economies, rapid growth in Greece, Iceland and Sweden contrasts with the more sluggish performance in Denmark, Norway and Switzerland. In Greece, the government aims to join EMU at the beginning of 2001, a formal application being submitted in early March 2000. Stringent fiscal consolidation led to a fall in the general government deficit to some 1.5% of GDP in 1999, down from 7.4% in 1996. Among the other Mediterranean countries, there was continued strong growth in Cyprus and Malta. In contrast, real GDP fell in Turkey in 1999, largely a consequence of the earthquake in the Marmara region in August. In Israel, economic activity picked up in the course of 1999, partly reflecting the improved export performance associated with the more favourable global economic developments

Consumer price inflation in the *euro area* started to edge upwards in the second half of 1999 (graph 2.1.3). This rise, however, is not reflected in the average annual inflation rate which was unchanged from 1998. In February 2000, the annual inflation rate was 2%, which is the upper limit of the (asymmetric) inflation target of the European Central Bank. In the main, the upturn since the second half of 1999 reflected the pass-through of the sharp rise in oil prices and the general upward pressure on import prices due to the depreciation of the euro. Labour cost pressures, however, remained relatively moderate. But the rise in non-energy commodity prices has also added to the pressure for higher prices. At the producer level, these pressures were reflected in a rapid rise of intermediate goods prices, which in January 2000 were 7.4% higher than in the same month of 1998. In contrast, final goods prices rose by less than 1% over the same period, which points to the limited scope for raising prices in the face of intense competitive pressures. These are also reflected in the still modest rate of core inflation: the consumer price index excluding food and energy was only 1.2% higher in February 2000 than a year earlier. The downward pressure of increased competition on prices was especially notable in the services sector where liberalization has led to large price cuts for telecommunication products. Similarly, the liberalization of the electricity market in several countries has lowered the price of electricity, a development which has partly offset the impact of higher oil prices on the overall inflation rate. There continue to be sizeable differences between the countries of the euro area, a reflection of both cyclical and structural factors: in February 2000, inflation ranged from 1.5% in France and the Netherlands to 4.6% in Ireland.

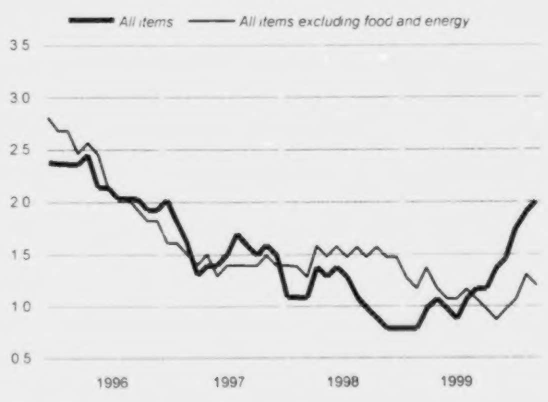
Outside the euro area, inflationary pressures have also remained generally moderate. In the United Kingdom, the strong pound and intense competition in the manufacturing and retail sectors led to a fall in goods prices in the second half of 1999. This contrasts with continued large increases in the prices of services reflecting the buoyancy of demand as well as cost pressures stemming mainly from rising labour costs.

Monetary conditions in the western market economies changed in the course of 1999 and in early 2000 towards a tightening of monetary policy. In the euro area, increases in short-term interest rates have partly offset the expansionary effects of the depreciation of the exchange rate. In contrast, in the United Kingdom and the United States, higher interest rates have accentuated the restraining effects on demand of their strong currencies.

GRAPH 2.1.3

The Harmonized Index of Consumer Prices of the euro area, January 1996-February 2000

(Percentage change over same month of preceding year)



Note: Tobacco and alcohol are also excluded from the "All items excluding food and energy" index.

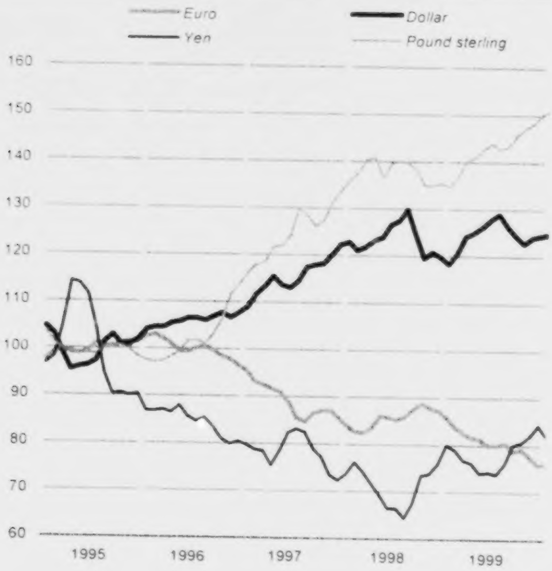
Source: Eurostat, 2000.

In the *euro area*, the stance of monetary policy began to be tightened in November 1999. The main refinancing rate was increased by 0.5 percentage point, to 3%, thus fully reversing the reduction in April. The European Central Bank argued that the move was designed to contain the medium-term risks to price stability against a backdrop of strengthening economic growth, rising oil prices, a rapid expansion of credit to the private sector and a growth of money supply significantly above the reference value of 4.5%. This policy was continued in early February and in mid-March 2000, when the main refinancing rate was raised successively by a quarter of a percentage point to 3.5%. In addition to the factors already noted, this decision also reflected concerns about the sizeable depreciation of the euro and its potential inflationary impact on domestic inflation via rising import prices, but it may be surmised that concerns about investors' confidence in euro-denominated financial assets also played a role (graph 2.1.4).

GRAPH 2.1.4

Real effective exchange rates, January 1995-January 2000

(Indices, 1995=100)



Note: Based on relative unit labour costs. The real effective exchange rate for the euro before January 1999 is based on the so-called "synthetic euro", i.e. a trade-weighted average of the bilateral exchange rates of the participating EMU countries against the dollar using their national conversion rates vis-à-vis the euro. For more information see the source.

Source: IMF, *International Financial Statistics* (Washington, D.C.), March 2000.

In a similar vein, in the *United Kingdom*, strong growth in domestic demand and increasing pressures in the labour market and on productive capacity led to fears that inflation would rise above the 2.5% inflation target. Consequently, there was a progressive tightening of monetary policy between September 1999 and early February 2000, the repo-rate being increased in stages by a full percentage point to 6%.

2.1.3 North American developments

In the *United States*, the economic expansion entered its 108th month in February 2000 – starting from a cyclical through in March 1991, this has been the longest upswing on record. Economic growth accelerated markedly in the second half of 1999, reflecting in the main the combined impact of faster rates of inventory accumulation and export growth in the presence of continued robust growth of private consumption and business fixed investment. The result was that real GDP rose by 4.1% in 1999, the third consecutive year in which annual growth exceeded 4%.

Against a background of improved foreign demand, manufacturing activity strengthened in the second half of 1999, and for the year as a whole increased by 4¼%, down from 4.25% in 1998. Within the average, there was a much stronger growth of durable than non-durable goods. But there still appears to be relatively large margins of slack in the manufacturing sector. Capacity utilization rates edged upwards only slightly in the course of the year, reflecting the continuing strong growth of capacity which in December 1999 was estimated to be some 4.5% larger than a year earlier

Private consumption in 1999 continued to be supported by further gains in real disposable incomes, reflecting in turn a combination of increases in real hourly earnings and employment. Against this backdrop, consumer confidence remained strong and in January 2000 reached its highest level in the 32-year history of this index. In addition, spending was stimulated by favourable lending terms and by further increases in wealth due to rising share prices and house prices. This is also mirrored in a further decline of the household savings ratio which was only 1.9% of disposable incomes in the final quarter of 1999, down from 3.5% a year earlier. The debt burden (the ratio of total debt service payments to family income) has risen above its previous record level in 1989.

Government spending also contributed to higher output levels in 1999. Fixed investment in equipment, notably information and communications technology and software remained one of the main driving forces of economic growth. Residential investment slowed down in the second half of the year under the impact of rising mortgage rates while outlays on business structures fell in each quarter of 1999.

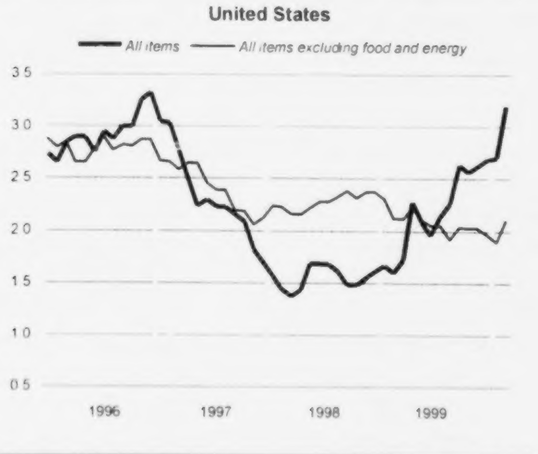
Export growth strengthened in the second half of the year, the restraining effects of the strong dollar being offset by the revival of demand in western Europe and other regions of the world economy. On the other hand, buoyant domestic demand led to continued rapid growth of imports. Changes in real net exports subtracted 1.3 percentage points from annual economic growth in 1999, the same as in 1998. The merchandise trade deficit rose to $347 billion, up from $247 billion in 1998. Combined with another decline in the surplus in services and the deficit in transfers, this translated into the current account deficit of some $339 billion in 1999, equivalent to about 3.7% of GDP and 1.2 percentage points more than in 1998.

A striking feature of the United States economy is the moderate inflation in the face of very tight labour markets. Core inflation remained broadly stable at 2% during 1999, and continued to do so in the first two months of 2000 (graph 2.1.5). This compares with an overall inflation rate rise of 3.2% in February 2000, the difference being solely due to the impact of the sharp rise in oil prices. Labour cost pressures remained moderate in the face of strong productivity growth. Hourly compensation in the non-farm business sector in the final quarter of 1999 was 4.3% higher than the same period of 1998, but unit labour costs were only 0.7% higher. This average outcome, however, is strongly influenced by favourable developments in the durable goods sector of manufacturing.

GRAPH 2.1.5

Consumer price indices in the United States, January 1996-February 2000

(Percentage change over same month of preceding year)



Source: United States Bureau of Labor Statistics, 2000.

Rapid economic expansion led to further substantial gains in employment in 1999. For the year as whole it increased by 1.5%. The gains have continued in early 2000, although there was a slowdown in non-farm payrolls in February. As in previous years, most of the additional jobs were in the services sector, where employment rose by 2.8% in the 12 months to January 2000. Increased construction activity also led to some rise in employment, but on the whole the number of persons employed outside the service sectors has remained broadly stable. The decline in manufacturing employment in 1998 petered out in the course of 1999, and although there were small gains in January 2000 (compared with the preceding month), mostly in construction related activities, it was still 1.2% lower than a year earlier. The rise in total employment increased the employment/population ratio to a record level of 64.8% in January 2000.

In the United States, the continued economic expansion at a rate above the trend rate of output growth and increasingly tight labour markets have raised concerns about the increasing risk of upward pressures on costs and prices. As a result, the Federal Reserve has reversed the easing of monetary policy which occurred in the second half of 1998 in response to the threats of international financial turbulence: the target for the federal funds rate was raised in three steps from 4.75% to 5.5% between June and November 1999, and in early February 2000 there was a further increase to 5.75%.

In Canada, the cyclical upturn continued strongly in the course of the year, supported by consumer demand and fixed investment. Against a background of rising employment and real income gains, household confidence strengthened markedly. Business investment was stimulated by the prospect of improved sales and by rising capacity utilization rates. Exports benefited from the strength of demand in the United States, the major trading partner, but also from the strengthening recovery in overseas markets. Exports helped to sustain activity in the manufacturing sector, while primary industries were stimulated by the rise in commodity prices in the course of 1999. In sum, real GDP rose by 4.2% in 1999, up from 3.1% in 1998. Rising prices for energy and services put upward pressure on the inflation rate, but this was partly offset by the dampening effect of a stronger exchange rate on import prices.

2.1.4 Countries with economies in transition

There are 27 member countries of the United Nations Economic Commission for Europe which, since the early 1990s, have been described as having "economies in transition"; that is, they are in the process of transforming the institutions, incentive systems and economic structures of central planning into those appropriate to a market system of decentralized decision making, largely, by private agents. This is a massive and complex task and very few of them have got anywhere near completing the process. The legacy of the command economy is still strong in many parts of the CIS, and in south-eastern Europe the process has been set back by a series of external shocks and by the effects of the various wars in the area. But in general the progress in institution building and structural change has been considerable even if it varies greatly among individual countries. Nevertheless, while some of the leading reformers in central Europe now have the capacity to handle such shocks with relative ease, many other transition economies remain highly vulnerable to external shocks, such as the Asian and Russian crises of 1997-1998 or the Kosovo conflict of 1999. Although the leading reformers are now, as a result of successful restructuring and integration with western markets, more sensitive to changes in domestic demand in western Europe – nearly three quarters of eastern Europe's merchandise trade is now with the European Union and for most of them Germany is the largest single trading partner – they succeeded in maintaining domestic demand and relatively high rates of GDP growth.

Economic growth slowed down very sharply in virtually all the transition economies at the beginning of last year and the outcomes were generally much lower than the forecasts made at the start of the year. Instead of growing by some 3%, as forecast, eastern Europe only managed 1.4%, while the Baltics plunged into a sharp recession. Only the CIS moved in the opposite direction, partly under the influence of Russia where GDP increased unexpectedly by more than 3% when most of the forecasts, official and unofficial, had been predicting another large fall in output.

This weak performance in 1999 to a large extent reflected the carry-over from the second half of 1998 of the after-effects of the general turmoil created by the Asian and Russian crises, aggravated for some economies by the Kosovo crisis last spring and by the slowdown in west European import demand. The Russian crisis had particularly severe consequences for the Baltic economies with massive cuts in their exports to Russia leading to a severe deterioration in output and employment. However, the unwinding of these various factors in the course of 1999 led to a marked improvement in central Europe in the second half of the year and a more moderate one in the Baltic states. The recovery in western Europe was particularly important for central Europe, while for the Baltic countries stronger west European import demand was not sufficient to offset the losses in the CIS markets. Economic growth in three of the leading reformers, however – Hungary, Poland and Slovenia – was least affected by the various shocks of 1998 and 1999: all three have reported rates of GDP growth for 1999 of more than 4%. (More information on Poland's economic developments may be found in special chapter 4.) Despite their dependence on the EU market for their exports, domestic demand, consumption and investment, including construction in Hungary and Slovenia, remained strong but, more generally, the performance of these countries reflects their economic "maturity" and the ability of their economic institutions to handle external shocks more easily.

The biggest surprise in 1999 was the recovery of output in Russia, GDP rising by over 3% instead of an expected fall of 2.5%. The factors behind this were the sharp rise in oil prices from the spring, which boosted profits and the government's tax revenues, a real depreciation of the exchange rate by nearly 50% since the August 1998 crisis, and a fall in real wages. The latter two factors enabled local producers to win back a significant share of their domestic market. Although GDP is expected to rise again in 2000, it is still difficult to be confident about the outlook for Russia because of the lacunae in the institutional framework and the limited progress made in microeconomic restructuring.

Nevertheless, the recovery in the Russian economy, together with higher world prices for oil and non-ferrous metals, had a favourable impact on the other members of the CIS with output continuing to fall only in Ukraine and the Republic of Moldova.

The economies of south-east Europe were obviously greatly affected by the Kosovo conflict and its aftermath for much of the year, although the direct impact on the neighbouring economies appears to have been less than feared. Reconstruction work in Kosovo itself has helped to raise industrial production in the region as did the recovery in west European import demand. But Romania remained in severe recession (GDP falling over 3%) and in Yugoslavia, with its infrastructure severely damaged by NATO bombing, GDP and industrial output are estimated to have fallen some 20% and more. There was, however, modest growth in Bulgaria and The former Yugoslav Republic of Macedonia (just over 2.5%) although in the former, industry remains in severe recession.

The setbacks to activity in the transition economies in 1999 checked the gradual improvement in employment that had taken place in the previous two years and, apart from Hungary and Slovenia as well as Russia and a few other members of the CIS, there was a general fall in the first three quarters of the year. In several countries in eastern Europe, especially Poland, the fall in employment was also due to a more intense rate of industrial restructuring. Unemployment, already high at the start of the year, reached an average 14.6% of the

TABLE 2.1.2

GDP growth rates for the ECE transition economies, 1997-2000

(Rates of change, %)

	GDP				
			1999		*2000*
	1997	*1998*	*Ex-ante forecast*	*Actual*	*official forecast*
Eastern Europe	2.1	1.8	2.9	1.4	4
Albania	-7.0	8	8	8	8
Bosnia and Herzegovina [a]	..	..	..	..	12
Bulgaria	-7.0	3.5	3.7	2.6	4
Croatia	6.8	2.5	1.5-2	-0.3	2.6
Czech Republic	-1.0	-2.2	-0.8	-0.2	1.5
Hungary	4.6	4.9	5	4.5	5
Poland	6.9	4.8	4.5	4.1	5.2
Romania	-6.1	-5.4	-2	-3.2	1.3
Slovakia	6.5	4.4	3	1.9	2
Slovenia	4.6	3.9	4	4.9	3¼
The former Yugoslav Republic of Macedonia	1.4	2.9	6	2.7	6
Yugoslavia	7.4	2.5	7	-19.3	14
Baltic states	8.4	4.5	4.5	-1.7	3
Estonia	10.6	4.0	4	-1.4	3.8-4.0
Latvia	8.6	3.9	4	0.1	3.5
Lithuania	7.3	5.1	5	-3.0	2
CIS	1.1	-3.0	-1.1	2.9	2¼
Armenia	3.3	7.2	4	3.0	5.6
Azerbaijan	5.8	10.0	9	7.4	8
Belarus	11.4	8.4	4-6	3.4	2-3
Georgia	11.3	2.9	8	3.0	4.2-4.8
Kazakhstan	1.7	-1.9	1.5	1.7	3
Kyrgyzstan	9.9	2.1	2.8	3.6	4-5
Republic of Moldova [b]	1.6	-8.6	-3	-4.4	2
Russian Federation ...	0.9	-4.9	-2.5	3.2	1.5-2.5
Tajikistan	1.7	5.3	..	3.7	..
Turkmenistan	-11.4	5.0	..	16.0	12
Ukraine	-3.0	-1.7	-1	-0.4	1
Uzbekistan	5.2	4.4	4.4	4.4	5
Total above	1.6	-1.1	0.7	2¼	3
Memorandum items:				..	
CETE-5	4.5	3.2	3.6	3.1	4.1
SETE-7	-3.4	-1.6	1.3	-2.9	3.6
Former GDR	1.7	2.0	..	..	..

Note: Aggregates are UN/ECE secretariat calculations, using PPPs obtained from the 1996 European Comparison Programme. Output measures are in real terms (constant prices). Forecasts are those of national conjunctural institutes or government forecasts associated with the central budget formulation. Industrial output refers to gross output, not the contribution of industry to GDP. Aggregates shown are: *Eastern Europe* (the 12 countries below that line), with sub-aggregates *CETE-5* (central European transition economies: Czech Republic, Hungary, Poland, Slovakia, Slovenia) and *SETE-7* (south-east European transition economies: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Romania, The former Yugoslav Republic of Macedonia and Yugoslavia); *Baltic states* (Estonia, Latvia, Lithuania); and *CIS* (12 member countries of the Commonwealth of Independent States).

[a] Data reported by the Statistical Office of the Federation; these exclude the area of Republika Srpska.

[b] *Excluding Transdniestria.*

Source: National statistics; CIS Statistical Committee; direct communications from national statistical offices to UN/ECE secretariat, 2000.

roughly 7.6 million people. In the Baltic states unemployment averaged just over 9% at the end of 1999, compared with 7.3% a year earlier. In Russia the unemployment rate was just over 12% at the end of the year, about a point lower than at the end of 1998.

The other setback last year was a general check to the decline in rates of inflation which had been underway for several years and had gathered momentum in 1998. The factors behind this – and the extent of the reversal – vary between countries, but the most important single reason was the external shock of the rise in commodity prices and the appreciation of the dollar against most currencies. Nevertheless, given the weak state of the labour market in most countries, and the generally prudent stance of macroeconomic policies, this upturn in prices seems likely to be no more than a temporary setback to the process of lowering inflation rates.

With a recovery of output underway since the second half of last year and with the prospect of a relatively strong recovery in western Europe, growth in all the transition economies in 2000 is expected to average 3%, with GDP in eastern Europe rising 4%. Hungary and Poland should again have the highest rates of expansion, of 5% or more, and depending on the rate of growth in western Europe these forecasts could be raised. As mentioned already, the Russian economy remains fragile and vulnerable to any external shock such as a sharp drop in the price of oil. Nevertheless, the government is expecting growth of up to 2% and some officials are forecasting more than that. All the other CIS countries expect a return to, or an acceleration of, growth in 2000, although some of these expectations are highly contingent (for example, on the avoidance of a debt crisis in Ukraine and on a major policy adjustment in the Republic of Moldova).

It was mentioned above that only a small group of former command economies are approaching the state of "normal" market economies. One particular subset of transition economies that has lagged far behind in the process are the (seven) economies of south-east Europe. Although these are not the only economies making slow progress, attention has been focused on them in the aftermath of the Kosovo conflict and by the subsequent efforts of the international community to draw up proposals for the economic regeneration of the region and, it is hoped, thereby strengthen the prospects for peace and general stability in the area.

Although, as noted earlier, the direct economic impact of the Kosovo conflict on south-east Europe was less than feared earlier in 1999, the damage was still significant and the economies of south-east Europe moved from modest GDP growth in 1998 (1.3%) into recession (about -3%). The improvement forecast for 2000 is largely a recovery from this recession rather than the first signs of sustained economic growth. The macroeconomic situation in most of these countries is still relatively fragile. In general the main success has been in reducing inflation, in several cases to very low rates. Current account deficits have been large and persistent, with a consequent build-up of foreign debt. Unemployment rates average nearly 17%, much higher than in central Europe. In conjunction with widespread job insecurity and discontent with living standards, this makes it difficult to implement reforms that might worsen the social situation still further in the short run. Domestic investment remains weak and foreign investment is not attracted to the region in any significant quantity.

2.1.5 Short-term outlook

Forecasts of *world* economic growth in 2000 have been revised upward after a better than expected performance in 1999. World output is estimated to have increased by 3% in 1999 about ¾ of a percentage point more than expected in the spring of 1999. Current forecasts are for an annual increase in world GDP by 3.5% in 2000 (compared with 1999). The strengthening of global economic activity in 1999 was accompanied by an upturn in world trade which had slowed down markedly during 1998. The volume of merchandise trade is estimated to have increased by 5% in 1999, the same as in 1998, and current forecasts are for an acceleration to 7% in 2000.

These optimistic short-term forecasts for the global economy, however, are conditional on a number of important assumptions, notably that there will be no financial crisis in the major emerging market economies, that the rise in oil prices will peter out and possibly be partly reversed in 2000, and that the United States economy will achieve a "soft landing".

Against a background of improving economic conditions in other regions of the world economy, the short-run economic outlook for *western Europe and North America* is now quite favourable. In western Europe, the cyclical recovery is expected to gain further momentum in the course of 2000, with real GDP currently forecast to increase by slightly more than 3% in 2000. This would be the largest increase since 1990, when there was a growth rate of 3.4%. In fact, in the absence of the downside risks discussed below and a somewhat stronger rate of growth than currently expected in Germany and Italy, the outcome could be even better, possibly closer to 3.5%. Performance in the euro and non-euro areas of western Europe is expected to be similar.

In *western Europe*, the main factor behind the strengthening recovery is likely to be the more rapid expansion of exports. Apart from rising intra-regional trade, this largely reflects the stronger demand from emerging markets and developing countries where the rate of economic expansion is also forecast to accelerate. Such a favourable export performance will contribute to the strengthening of domestic demand. Private consumption will be supported by rising real incomes, in turn the result of further gains in employment and higher real wage rates. Business investment should be stimulated by rising capacity utilization rates and improved sales prospects. Changes in stock building will also make a small contribution to higher output growth. The stronger growth of domestic demand, however, will lead to a rising demand for imports and the change in real net exports should be broadly neutral in its effect on economic growth in 2000. (In 1999 net export subtracted half a percentage point from GDP growth.) Among the four major economies, France and the United Kingdom are likely to develop the strongest cyclical momentum, but growth is also accelerating in Germany and Italy, where the business climate improved markedly in early 2000. Italy, nevertheless, is expected to continue to grow more slowly than most of the other west European countries. The rate of economic expansion will remain quite strong in the smaller west European economies.

In the *United States*, the consensus of forecasts is for the cyclical expansion to slow down from the high rates of the final two quarters of 1999. Average annual growth in 2000 could still be some 4%, which includes, however, a significant statistical carry-over effect from 1999. Broadly the same outlook is forecast for Canada. These forecasts imply a significant narrowing of the growth differential between North America and western Europe in 2000. This benign scenario could continue into 2001, especially if the cyclical upturn in the various regions of the world economy leads, via the foreign trade channel, to a mutually reinforcing process of economic growth.

In the United States, robust private consumption and business fixed investment are likely to remain the mainstays of economic growth, partly supported by continuing positive wealth effects. Exports are expected to strengthen as a result of the more favourable international economic environment. A slowdown in employment growth and less favourable financing conditions associated with the tightening of monetary policy, however, should tend to dampen household expenditures and fixed investment. Import demand should remain strong but the changes in real net exports is likely to be considerably less of a drag on domestic activity in 2000 than in the two preceding years. In view of the continuing strength of economic growth, the unemployment rate should stay close to 4%. Inflationary pressures are still expected to remain rather moderate, given the assumptions about developments in the oil markets and that increases in productivity should continue to largely offset increases in labour costs. The slowdown in the rate of expansion in the course of 2000 should bring the growth of demand somewhat closer to the lower rate of potential output growth. This gradual "soft landing" has already been forecast for the last few years, but the continuing strength of the cyclical upturn has been systematically underestimated.

There remain, however, a number of downside risks which, if not contained, could lead to less favourable or even quite bad outcomes. A major uncertainty hanging over the international economy is the future direction of oil prices and its effects on inflation and growth. In the United States, the rate of expansion may not slow down sufficiently in time to avoid overheating. Important downside risks, moreover, continue to be attached to the possibility of a sharp downward correction of the high level of United States stock prices and to the sustainability of the record United States current account deficit.

The short-term prospects for the *transition economies* at the beginning of 2000 are now considerably better than they were in the middle of last year. Both domestic conditions (notably the recovery of output and the improvement in domestic demand) and the external environment (dominated by the cyclical upturn in western Europe) are much more favourable than they were in 1999. The available official forecasts suggest that the governments in practically all the transition economies expect positive GDP growth in 2000 and in most cases an acceleration of the economic recovery. GDP in the ECE transition economies as a whole should increase on average by some 3% in 2000, which would represent a record rate of growth for the region as a whole. Growth in eastern Europe is expected to average close to 4%. In the Baltic states the expectation is for an average 3%. And in the CIS countries as a whole, GDP could increase by more than 2%. As the forecasts are, in most cases, based on draft budgets, prepared in late 1999, they may be somewhat conservative.

In any case, strong and steady economic growth can be expected to continue in Hungary, Poland and Slovenia, and these economies are likely to preserve their leading positions in the ranking of east European growth rates. The expected 2% GDP growth in Slovakia reflects the continuation of a cautious adjustment effort after the authorities abandoned an unsustainable expansionary course in late 1998. The authorities in Croatia and the Czech Republic expect positive rates of GDP growth in 2000, although these are likely to remain relatively low. An economic upturn is expected in the three Baltic states as well, but their rates of growth are unlikely to return to those prevailing before the Russian crisis.

After a generally weak performance in recent years, the governments in a number of south-east European transition economies (Albania, Bosnia and Herzegovina, Bulgaria, The former Yugoslav Republic of Macedonia and Yugoslavia) expect relatively high rates of GDP growth in 2000. But even if these forecasts materialize, in most cases they will only reflect recovery from a very low base; the return of this region to sustained and high rates of economic growth still requires major restructuring and large-scale new investment. In Romania, economic activity is likely to remain weak in 2000 (the government expects only 1.3% GDP growth).

The current recovery in Russia hinges on a fragile equilibrium which is based on the post-crisis gains in competitiveness (thanks to a large depreciation in the real exchange rate and a fall in real wages) coupled with favourable external conditions (in the first place, high oil prices). However, the economy remains highly vulnerable to a reversal in any of these conditions (for example, a fall in oil prices); hence, the short-term economic outlook for Russia still remains rather uncertain. Nevertheless, at present the Russian authorities are quite optimistic as regards the short-term economic outlook. According to the budgetary projections, GDP is expected to grow by some 1.5 to 2% in 2000, although some Russian officials have recently suggested that the rate of growth could be even higher.

Recovery in Ukraine has been underway since the third quarter of 1999 and has continued during the first months of 2000 although the uncertainties regarding the short-term outlook are probably even greater than in Russia. In Belarus, after the setback caused by the Russian crisis, the authorities have set a relatively modest growth target for 2000, which they hope to support with a new, export-oriented policy. The return of the Republic of Moldova's economy to growth will largely depend on the success of a policy adjustment initiated by the government.

In general, the authorities in most of the other CIS countries have set rather ambitious targets for 2000: GDP growth is envisaged to accelerate in all the Caucasian economies as well as in most of the central Asian CIS countries.

2.2 Construction sector developments

This section presents trends in the construction in Europe, North America and Japan, as construction is the single largest market for sawnwood and panels. It concentrates on new residential construction and repairs and maintenance, as these are the sectors which are the most intensive users of wood.

2.2.1 Overview

In two of the world's three major markets, 1999 saw strong construction activity. In the *United States*, housing starts rose further from the already high level of 1998 to a seasonally adjusted annual rate just below 1.8 million units in spring 2000. The housing boom is fuelled by rising real incomes, falling unemployment, still moderate mortgage rates, and the "wealth effect" caused by the strong rise in the stock markets. In Canada, housing starts rose all through 1999 and early 2000, to reach an annual rate of 170,000 in March. Since then, they have fallen sharply, partly because of a truckers' strike in Greater Toronto.

In *Europe* total construction in western Europe rose by 3.0% in 1999 after three years of slow or even negative growth. Further growth is expected for 2000 and 2001. Similar trends are expected for the two components of most importance for forest products, new residential construction and repairs and maintenance. Rather slower growth is recorded for the aggregate of four east European countries, but there are strong differences between countries.

Japanese housing starts however stagnated around a rate of 1.2 million units, about 25% less than in 1996. Just over 46% of these were wood frame units.

In *Russia*, construction output rose by 5.4% in 1999, the first rise after three successive falls, some of which were very steep. In general construction activities in transition economies were rather volatile, and no regional trend is visible.

2.2.2 Construction in Europe

This section is based on data kindly supplied by Euroconstruct, a consortium of research institutes specialising in the construction sector. Euroconstruct divides the construction sector into four parts: new residential construction, non-residential construction, civil engineering and residential renovation and modernization.

In most west European countries, construction (total) grew by 3 to 5%, although in Ireland and Spain, the rates were above 10% (table 2.2.1). However, it fell in Denmark (-3%), Norway (-5%) and Switzerland (-3%). In Germany it fell marginally, but this slight fall represented a significant improvement on the series of declines which had been recorded since the end of the boom associated with reunification.

Moderate growth is forecast by Euroconstruct for total construction output in 2000 (+2.6% for western Europe) and 2001 (+1.6%). In both years, German construction output is expected to grow by just over 1%. Despite this recovery in the construction sector of western Europe, growth will continue to be slower than that of GDP, so that the share of construction in the economy will continue to decline, as it has for the past decade.

The four eastern European Euroconstruct members record contrasting developments for 1999 in total construction: growth of 5 to 7% for Hungary and Poland, and a drop of nearly 7% for the Czech Republic. Slovakia expects a very steep decline, 27%. However, growth in the 5 to 10% range is expected for Hungary, Poland and Slovakia in 2000 and 2001, with marginal growth in the Czech republic.

From the point of view of forest products markets it is more relevant to focus on trends for new residential construction and for repairs and maintenance than on developments for aggregate construction.

For new residential construction, 1999 saw growth, compared to 1998, of over 10% in France (+13.6%) and a small group of mostly Iberian and Nordic countries (Portugal, Spain, Finland, Sweden, Ireland). However, there were marked drops in Austria, Denmark, Switzerland and the United Kingdom, and little change for Italy and a group of neighbouring countries in north-west Europe (Belgium, Netherlands and Germany). The 2.8% growth recorded for the group as a whole is therefore an average of very different tendencies in different areas. Likewise in transition countries, Poland and Slovakia recorded growth of more than 10%, while falls were reported by Hungary (-5%) and the Czech Republic (-14.4%, after three years of uninterrupted strong growth).

The outlook for new residential construction in 2000 also varies strongly between groups:

- Very strong growth (mostly 10% or more in 2000) in the Nordic countries and Ireland;
- Moderate growth, mostly around 2 to 3% per annum, for the other west European countries, including France (2.5%, contrasting with the double digit growth registered in 1999), Italy (2.1%) and United Kingdom (3.0%);
- Continued decline or stagnation in Austria, Denmark and Germany; and
- Double digit growth in Hungary, Poland and Slovakia, but a drop in the Czech Republic for the second successive year.

For 2001 and 2002, slower growth is forecast (considerably less than 1% for the region as a whole in

TABLE 2.2.1

Developments and outlook for the construction sector in Europe, 1998-2002

(% change over previous year)

	New residential construction					*Renovation*				
	1998	*1999*	*2000 f*	*2001 f*	*2002 f*	*1998*	*1999*	*2000 f*	*2001 f*	*2002 f*
Austria	-5.8	-7.2	-3.4	-1.6	-0.6	30.7	3.4	1.1	2.4	2.2
Belgium	2.2	-0.5	2.0	1.0	2.0	4.0	3.0	3.0	3.0	3.5
Denmark	8.4	-6.6	-5.0	0.0	0.0	0.5	5.7	2.0	0.0	2.0
Finland	12.0	13.0	12.0	5.0	0.0	6.0	1.0	1.0	2.0	5.0
France	4.1	13.6	2.5	-5.5	-2.9	1.8	2.5	6.0	1.5	2.5
Germany	-6.7	-0.6	-0.5	0.5	1.0	0.5	0.5	0.8	1.0	1.5
Ireland	9.0	12.8	9.7	2.8	0.1	-5.4	2.7	-4.7	3.1	3.1
Italy	-6.0	1.2	2.1	1.9	2.3	4.6	8.0	3.4	-1.4	0.9
Netherlands	-2.5	-0.3	5.3	1.3	0.8	1.5	2.2	2.2	2.8	2.6
Norway	-1.7	4.6	20.1	-0.3	-10.3	-8.5	4.0	7.0	2.0	2.2
Portugal	9.1	11.0	5.0	1.0	-5.0	8.0	8.0	4.0	5.2	5.1
Spain	7.5	12.5	7.5	1.0	0.0	6.3	6.0	6.0	6.0	6.0
Sweden	1.4	21.8	14.0	14.6	12.7	1.5	4.3	4.8	6.2	5.5
Switzerland	2.8	-1.5	1.1	2.0	1.5	6.2	-3.0	1.4	5.0	4.5
United Kingdom	-0.2	-6.2	3.0	2.6	0.5	-1.6	-3.2	5.0	5.1	0.0
Western Europe (EC-15)	-1.4	2.8	2.5	0.4	0.2	2.1	2.3	3.1	1.8	1.9
Czech Republic	8.9	-14.4	-2.4	0.6	-0.8	0.5	-3.4	-0.9	5.8	9.3
Hungary	-15.0	-5.0	12.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Poland	13.3	12.8	10.0	12.0	15.0	0.5	2.5	0.0	1.5	3.5
Slovak Republic	11.1	11.5	19.3	27.0	21.5	10.3	15.0	17.0	25.0	23.0
Central Eastern Europe (EC-4)	3.0	3.9	9.7	11.9	13.3	2.0	3.4	1.9	3.8	5.6
Euroconstruct Europe (EC-19)	-1.3	2.8	2.6	0.6	0.5	2.1	2.3	3.1	1.9	2.0

f = Euroconstruct forecast.

EC = Euroconstruct.

Source: Euroconstruct, 2000.

both years), with only Sweden, Hungary, Poland and Slovakia expecting strong growth, and many forecasting drops. Germany however forecasts slow growth (1% or less) for both years.

For many years, the rate of growth for residential renovation and modernization, has been higher than that for residential construction, but for the Euroconstruct western Europe region in 1999, growth was slower for renovation (2.3%) than for new residential construction (2.8%). Growth was strong in Italy, Portugal and Spain, but this was counteracted by sluggish growth elsewhere, notably Germany (0.5%) and falls of over 3% in Switzerland and the United Kingdom. There was double digit expansion in Hungary and Slovakia, but a fall in the Czech Republic.

The outlook is for a recovery in residential renovation and maintenance in 2000, with regional growth over 3% (slightly higher than for new residential investment), followed by growth around 2% in 2001 and 2002. Most countries are expected to show similar growth rates over the period, with faster than average growth in Iberia, Ireland, Hungary and Slovakia. The rate of growth in Germany will be between 0.8% and 1.5% in the three years, while France should see 6% growth in 2000, followed by rates around 2% in the next two years.

2.2.3 Construction in North America

The longest ever housing boom in the United States continued for another year in 1999. The United States housing starts, from their low point in 1991 of about 1 million, have risen strongly to reach an annual rate in February 2000 of 1.8 million units (graph 2.2.1). The figure for the whole year 1999 was 1,665,000 units, the highest total since 1986. Furthermore, 1,333,000 of these (80%) were single family units, the most intensive users of wood, the highest figure since 1978. Among the reasons cited for the long boom, which has in fact in recent years been the most important influence on world forest products markets, are:

- The strong expansion of the economy as a whole, which has raised incomes, and consumer confidence;
- Reasonably low interest rates, in absolute terms (although, they are not negligible in real terms, given the very low rates of inflation);
- The rise in share prices, which has created a "wealth effect" i.e. that even if the gains in share prices have not been realized, share owners feel richer and are thus more willing to invest in a house;
- Low unemployment; and
- Easy availability of land, materials, and a strong, efficient, construction sector.

In recent months, United States interest rates have risen several times: in June 2000, the average rate on a 30-year fixed rate mortgage was 8.5%, up from 7.15% in May 1999. As mentioned above, the Federal Reserve is trying to prevent overheating of the economy and encourage a "soft landing". Furthermore, many high-tech stocks saw their prices fall dramatically in May 2000, which had an effect on confidence. Both these factors seem to be having an effect on the housing market, which fell quite sharply in March and again in May (after a minor recovery in April). In May 2000, the United States housing starts were at a rate of 1.59 million units, the lowest level since June 1999. The 3.9% drop in May was sharper than expected by analysts. Professional associations in the housing area expect housing starts and home sales to drop in the second half of 2000, but note that this is a fall from historically high levels, and that activity is still rather strong. New building permits, a leading indicator for the housing market also fell in May 2000, by 4.3%, faster than expected.

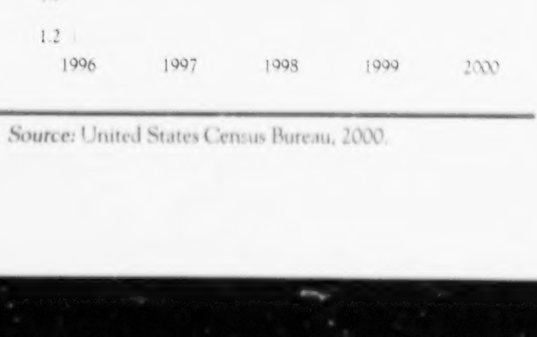
The figures for May 2000 also show differences between regions and types of housing: starts fell in the West and Midwest, but rose in the North-east and South. Single family housing fell by 5.4%, while other starts (multi-family, apartments, condominiums) actually rose by 2.1%.

It remains to be seen whether these events mark a definite slowdown in the housing market, and, if so, how sharp and long the fall will be. (Last year's *Review* noted a similar fall in spring 1999, which was reversed within a few months). However, the signs are that the end of the long-term boom in United States housing is in sight. (Additional information on the United States housing situation may be found in chapter 11 on engineered wood products.)

GRAPH 2.2.1

Housing starts in United States, 1996-2000

(Seasonally adjusted annual rate)



Source: United States Census Bureau, 2000.

In *Canada*, housing starts rose steadily from mid 1998 to February 2000. In 1999, nearly 150,000 houses were started, 9.1% more than in 1998. However, as in the United States, a downward trend became evident from March 2000. Between February and May 2000, Canadian housing starts fell from a rate of 170,000 units to 142,000, a fall of over 15% in three months. However, there may be special factors: a strike by concrete truck drivers in the Greater Toronto area significantly slowed housing starts in Ontario (the Province with the most construction activity), and some analysts expect activity to recover in June.

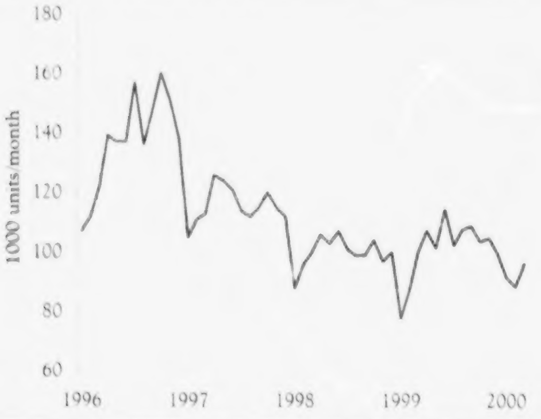
2.2.4 Construction in Japan

Japan reported an increase in housing starts in 1999, to 1.21 million units, 1.3% more than in 1998, a year of economic crisis (graph 2.2.2). However, 1999 starts were still 429,000 (26%) less than in 1996, so the small increase recorded in 1999 did not go far in compensating the falls in 1998. Furthermore, this increase took place against a background of incentives put in place by the Japanese government to stimulate consumption. Presumably without these measures, the performance of the construction sector would have been even weaker. The fall in the housing market since 1996 reflects no doubt the general lack of dynamism of the Japanese economy as well as the insecurity which arises from changes in the functioning of the traditionally very stable employment patterns in Japan.

Some structural factors may also be behind these developments in the housing market, notably the ageing of the population and the limited availability of constructable land. Japanese home owners are also now tending to build higher quality, longer-lasting houses, often demolishing the old building and replacing it with a new one on the same site. This would tend to reduce the number of starts as the population is stable and each house has a longer useful life.

GRAPH 2.2.2

Housing starts in Japan, 1996-2000



Source: Japan Wood-Product Information and Research Center, 2000.

In 1999, 565,000 Japanese housing starts were for wood-framed houses, 46.6% of the total (graph 2.2.3). This includes both traditional Japanese post-and-beam methods, which account for over 80% of wood frame starts, and North American style "platform frame" or "2x4 type" construction, which is increasing its share of the wood frame construction market

2.2.5 Construction in the transition economies

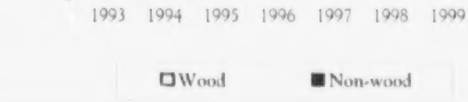
Table 2.2.2, extracted from the Economic *Survey for Europe* and based on several different types of information[1] (see footnote to the table), demonstrates the extreme volatility of the construction sector in transition economies and the lack of a single regional trend, as national factors influencing the construction sector predominate. There is nevertheless a tendency (by no means universal) for construction growth to be stronger in those countries where the transition process is more advanced.

Four groups can be identified, on the basis of developments in 1999:

- **Strong growth:** includes Hungary, Slovenia and

GRAPH 2.2.3

Share of wood and non-wood housing in Japan, 1993-1999



Source: Japan Wood-Product Information and Research Center, 2000.

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[1] For that reason the figures are not exactly the same as those provided by Euroconstruct for its four transition country members, although the direction and intensity of change coincide well.

Latvia, in all of which there has been sustained growth over several years, and Kazakhstan, where the 26% rise in 1999 only partially corrected steep falls over the previous three years;

- **Moderate growth/stability:** includes Poland, whose growth slowed somewhat after two years of strong growth, Russia, where the 5.4% growth rate started to counteract the drops over the past three years, and Belarus, where a slight fall followed two years of strong expansion;
- **Moderate fall:** includes Bosnia and Herzegovina and Croatia, where construction activity slowed down after post-war growth, as well as the Czech Republic and The former Yugoslav Republic of Macedonia, where the construction sector has been contracting for several years;
- **Steep falls:** includes Slovakia and Lithuania, where construction contracted sharply after a period of expansion, and Romania and Yugoslavia, where construction activity has been falling sharply for some time.

TABLE 2.2.2

Gross construction output[a] in the ECE transition economies, 1996-1999

(Annual percentage change)

	1996	*1997*	*1998*	*1999*
Bosnia and Herzegovina			17.5	-8.4
Bulgaria	17.5	-4.4	-15.5	..
Croatia	9.0	16.7	0.7	-7.7
Czech Republic	5.3	-3.9	-7.0	-6.5
Hungary	-0.1	9.7	13.1	6.1
Poland	4.6	17.1	11.0	3.2
Romania	3.7	-24.4	-0.6	-19.5 [b]
Slovakia	4.4	9.2	-3.5	-25.8
Slovenia	-2.5	-5.2	1.7	10.7
The former Yugoslav Republic of Macedonia	2.0	-16.0	-9.0	-7.0 [c]
Yugoslavia	-9.0	-3.0	-6.0	-21.0
Estonia	21.0	15.0	..	..
Latvia	5.3	8.2	16.5	7.8
Lithuania	-7.2	12.3	22.6	-14.2 [d]
Belarus	-2.0	15.0	16.0	-1.0
Kazakhstan	-36.0	-4.0	-17.6	26.4 [e]
Kyrgyzstan	-31.0	14.0	-47.7	..
Republic of Moldova	-13.0	-12.0	..	..
Russian Federation	-14.0	-6.0	-5.0	5.4
Ukraine	-31.0	-9.9	2.7	..

[a] In Croatia, Slovenia, the former Yugoslav Republic of Macedonia and Yugoslavia construction refers to effective working time. In Poland work abroad and by enterprises not classified in construction is excluded. In Estonia construction refers to sales of construction work. In Latvia, Lithuania, Belarus, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation and Ukraine construction refers to the volume of work done by construction enterprises and companies.

[b] January-June.

[c] January-July.

[d] January-November.

[e] *January-September.*

Source: National statistics; CIS Statistical Committee; direct communications from national statistical offices to UN/ECE secretariat, 2000.

Chapter 3

Effects of the December 1999 Storms on European Timber Markets

Highlights

- Severe windstorms felled 193 million m^3 of roundwood in December 1999, the equivalent of 2 years' harvest in affected countries.
- Roundwood markets in Europe were in chaos with sharp falls in prices initially, although some order had been restored by mid 2000.
- Government measures intervened to stabilise markets, assist forest owners and provide necessary infrastructure. Some planned harvests were postponed outside the storm-damaged zones.
- Considerable roundwood was salvaged quickly, or stored, before the onset of attack by pathogens or fire.
- Existing trade channels within Europe were strengthened and new markets were found in central and eastern European countries and in Asia.
- Similar to the 1990 storm's effects on wood products markets, the fluctuations in supply and price were absorbed during primary processing and there were little distinguishable effects in sawnwood, panels and pulp production, prices or sales.
- Greater market calamity was mitigated through sector solidarity.
- The crisis will have some long-term benefits for the sector due to its valuable public relations opportunities, new export and energy markets, and development of harvesting, transportation and manufacturing capacity.

3.1 Introduction

3.1.1 *Three storms of unprecedented violence sweep Europe in one month*

Europe was swept by severe windstorms in December 1999 which left paths of destruction in many European forests, especially in France, Germany and Switzerland. Millions of trees were broken and uprooted and millions of cubic metres of roundwood were left for forest managers to harvest before the onset of infestations of insects and disease or fires.

While some countries experienced the equivalent of several years worth of harvest in a day, some localities had most of their forests felled with sudden, direct consequences for the forest-based industries and people's livelihoods, not to mention ravaged landscapes. While over time the forests will regenerate, the scars of the storm will last for generations in the worst hit communities.

There were in fact three hurricanes that struck Europe in December 1999. An early windstorm on 4 December, named Anatol, caused damage principally in Sweden and Denmark. The second major storm, named Lothar, came on 25-26 December and decimated forests in northern France, Switzerland, Germany, Belgium and other countries to the east. And then the third wind and rainstorm, named Martin, followed on 27-28 December and swept through the southern half of France, moving eastward through Switzerland, Austria and ending in the Baltic countries unless there was unreported damage in Russia.

3.1.2 *What happened when, where and why?*

The purpose of this special chapter on the market effects of the storm extensive damage is multi-fold. First, there has never been a storm measured which resulted in such damage, and the impacts on timber markets are both immediate and will continue to skew markets for 2 to 3 years. Second, as explained below, this storm will not be the last and lessons learned this year can help after future storms, both in the countries which sustained damage this time, and for those countries which incur storm damage the next time. And third, the Joint Timber Committee and European Forestry Commission Session will discuss the storm damage as a special topic; this chapter provides background information and brings forth topics for discussion.

Information for this chapter was collected primarily through two meetings held in Geneva which focussed on the storms' effects on markets. The first meeting brought together representatives of the governments[1], trade and forest owners from France, Germany and Switzerland in March 2000. Later in June, the Joint FAO/ECE/ILO Committee on Forest Technology, Management and Training discussed the storms and their effects on forest management and forest products markets as their special topic. The secretariat is indebted to the meeting participants for their insight and information for this chapter. In addition the trade press has documented the evolving situation and their information is incorporated here. Finally the Timber Committee established a clearing house for information on its website in January 2000 and the links to other websites, especially those in France, Germany and Switzerland were beneficial too.

Although this chapter focuses on the 3 main countries which sustained storm damage, France, Germany and Switzerland (in alphabetical order as well as in order of magnitude of damage sustained), numerous other countries incurred substantial damage. In Germany, the overall material damage was estimated at over $10 billion, including $1 billion in forests. Lack of mention of other countries' situations is not intended to reflect any opinion on the part of the authors, but rather either a lack of information or a lack of time in preparing the chapter.

This story focuses on the forest sector market effects, however there were also during the storm or in the clear up phase, terrible consequences in some localities for wildlife habitat, for personal property struck by falling trees, for infrastructure such as electric and telephone lines, etc. Other economic sectors were also decimated and lack of mention does not indicate a lack of recognition and concern, but rather a focus on this sector.

Most tragic of all was the loss of life. In Europe, at least a hundred deaths can be attributed to the storm. Perhaps the most affected group has been forest workers engaged in the extremely hard and dangerous work of clearing wind thrown trees. There were 19 deaths in German harvesting operations alone. Our sincere sympathies go out to all victims of the storm.

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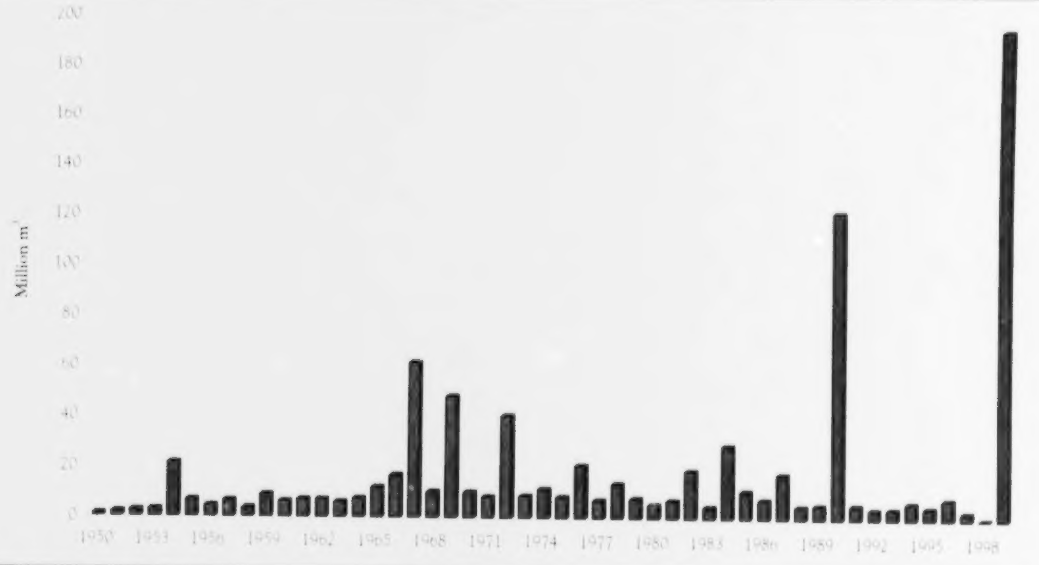
[1] The authors are especially grateful to the leaders of delegations to the two meetings: From France: Mr. Paul Delduc and Mr. Roger Bonneviale, Ministère de l'Agriculture et de la Pêche, and Mr. Pierre Verneret, Fédération Nationale du Bois; from Germany: Mr. Johannes Dengg, Federal Ministry of Food, Agriculture and Forestry; and from Switzerland: Mr. Thomas Grünenfelder, Office fédéral de l'Environnement, des Forêts et du Paysage.

GRAPH 3.1.1

Windstorm damage in European forests, 1950-1999



Source: Mr. Mart-Jan Schelhaas, Alterra, Netherlands, 2000.

3.1.3 *How exceptional is the 1999 storm damage?*

Storms have frequently caused "catastrophic" damage to Europe's forests – windblows of over 20 million m³ have occurred about 10 times since the early 1950s (graph 3.1.1). The damage sustained in 1990 and 1999 was by far the worst of all these years. There is insufficient evidence to demonstrate that storms are becoming more frequent or more severe. However, enormous storm damage has occurred regularly and, it is safe to assume, will occur again.

For very large volumes of wood to blow down, two conditions are necessary: an excessively powerful meteorological event and a forest ecosystem with insufficient wind resistance. Both conditions were met in 1999. "Lothar" and "Martin" were exceptionally violent storms.

A bizarre meteorological combination combined 3 factors which unleashed the 26-28 December storms: 1. a blast of strong polar air, 2. a jet stream oscillating between 350 and 400 kph compared to the normal 100 kph, and 3. a series of zones of extremely low pressure at low altitudes. Taken separately, none of these factors would have set off a storm of this magnitude, but taken together they detonated an explosion which ripped through Europe.

After one wave of wind passed, another followed as the turbulence created more zones of depression mixed with mounting humid tropical air. The result was heavy rain and dense, wet snow where temperatures were below freezing. At higher altitudes tree limbs snapped and saplings bent over from the weight of the heavy, wet snow. Clean-up became dangerous, if not impossible, above the snow line.

Wind velocities near Geneva, Switzerland on top of the Jura Mountains, exceeded 200 kph (approximately 125 miles per hour). In other areas of Switzerland winds were measured at 240 kph. In France, most of the country sustained winds near 150 kph or above in one of the two storms. In many areas of France and western Switzerland, heavy rains throughout December preceded the storms (reaching record rainfalls for the year). This meant little resistance from water-soaked soils to the movement of the root systems. Many trees were simply blown down while others were broken, leaving more unusable wood than in the uprooted trees.

Based on historical observations, the worst months for storm damage in forests are September, November, January and February (doctoral thesis by Dr. D. Doll, University of Lyon, 1988, as reported by *La Forêt Privée*, nos. 198 and 199). These averages will undoubtedly be changed by the December 1999 storms.

The sensitivity of the forest to storms is of course a function of the site, the species and the silviculture. However, a report prepared for the French authorities attributes the increase over time in forest damage due to storms in France to a number of factors:

- a greater forest area;
- higher standing volume per hectare;
- replacement of (relatively wind stable) coppice and coppice with standards by high forest;
- more stands with high dominant height; and
- increase in certain conifers, such as Douglas fir, spruce and fir. (Source: Birot, *et al.* "Expertise collective sur les tempêtes, la sensibilité des forêts et sur leur reconstitution", 2000".)

3.2 Damage magnitude: the equivalent of 2 years' harvest in 3 days!

The most severe storm damage occurred in France, Germany and Switzerland, however many other countries sustained significant damage (graph 3.2.1 and table 3.2.1). In the 8 countries sustaining significant damage, the windthrow was equivalent to 2 years' harvest. In all of Europe the damage was equivalent to a half year's harvest.

TABLE 3.2.1

December 1999 windthrow versus 1998 annual removals in Europe

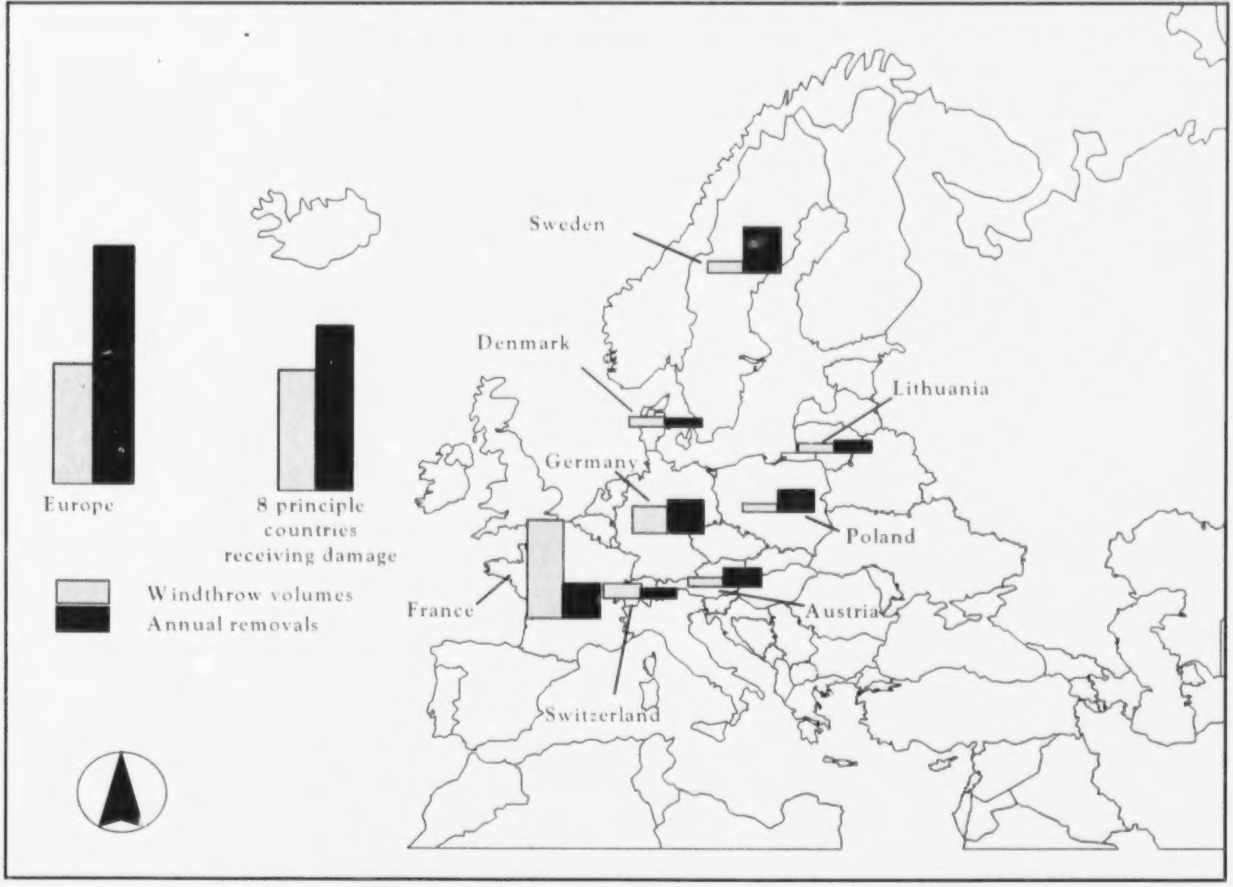
(Million m^3)

	Windthrow volumes	*Annual removals*	*% of annual removals*
France	139.6	42.9	325.4
Germany	30.0	39.0	76.9
Switzerland	12.1	4.2	288.1
Sweden	5.0	58.1	8.6
Denmark	3.5	2.2	159.1
Poland	2.0	23.3	8.6
Austria	0.4	14.0	2.9
Lithuania	0.4	4.9	8.2
Subtotal	193.0	188.6	102.3
Belgium	Minor	4.1	-
Estonia	Minor	6.1	-
Latvia	Minor	10.0	-
Spain	Minor	15.6	-
Other countries		156.4	-
Total Europe	193.0	380.8	50.7

Sources: National reports; ECE/FAO TIMBER database; and www.unece.org/trade/timber, 2000.

GRAPH 3.2.1

Windthrow versus annual removals in Europe, 1999



Sources: ECE/FAO TIMBER database; national reports; and www.unece.org/trade/timber, 2000.

The table shows only part of the story as the volumes of windthrow were based on surveys in January and February 2000. Some mountainous regions were surveyed by air due to roads blocked by fallen trees and snow. However the damage reports had not changed significantly by summer 2000.

The storm damage represents a sudden, involuntary increase in supply, making available a large amount of wood, whatever the levels of demand. It follows from this that the seller – the forest owner – loses all freedom of action in the market discussions, and becomes a price-taker. Among the options to protect prices and market equilibrium and to minimize losses (in the absence of government intervention) are the following, all of which forest owners put into action:

- Reduce supply as much as possible (e.g. by leaving wood in the forest or arranging for other suppliers not to harvest).
- Spread supply over a longer period (e.g. by stocking harvested roundwood).
- Find new or increase existing outlets (e.g. energy, raw material exports).

Also entering into the equation were the higher harvesting costs and lower productivity due to difficult operating conditions. Logging crews were in limited supply and therefore costs for their services rose.

Transport costs were higher than normal because of scattered location of logging sites. Hauling distances increased dramatically to transport roundwood to mills outside the storm zones, either for export or for domestic markets unable to draw from local forest resources due to temporary logging bans.

Governments are faced with difficult policy dilemmas of how to help the main losers, i.e. the forest owners, who have not only seen the prices they receive fall and their production costs rise, but also the destruction of capital stock for several decades. Governments must act quickly without penalizing wood buyers or infringing the international law in matters such as migration of labour, subsidies to domestic producers, etc. Governments also provided many forms of assistance as explained below.

The real question is what percentage of the fallen timber would be usable and removable from Europe's forests? Government estimates were that only 50 to 75% of the storm-felled timber would ever make it to the market. Much of the rest would be left in the woods because it is either too damaged to be economically removed, or because it is inaccessible in mountains or on steep hillsides.

Other large portions of the damaged timber would be consumed in local uses, mainly for firewood, which will never show in national statistics. Some additional volumes were given to sawmills by owners of small forest tracts in compensation for clearing roads and forests, and these volumes too will not appear in statistics. One of the lessons learned in Germany after the last major storms in Europe in 1990 was that approximately 30% of the estimated windthrow removals from forests could never be found in the official statistics. There were also reports of theft of logs during the disorder which followed the storms.

Of the approximately 140 million m^3 of roundwood blown down in France, only 55 million m^3 were estimated to be recoverable (Fédération Nationale du Bois, May 2000). As of May 2000 most of that, about 30 million m^3, was still in the forests, although a small volume was properly stocked there. Approximately two-thirds of the windthrow was on private forests (90.1 million m^3) and the rest on public forests. By the end of May, the equivalent of a year's harvest had been removed from forests.

In Switzerland, about 40% of the storm-felled timber was harvested and most of that already sold in June 2000 – six months after the storm. Another 35% will be recovered until spring 2001 and the remaining of 25% will be left in the forest and never reach the market.

In Switzerland, wood will be removed if it:

- presents a hazard, for example blocking streams or creating a potential landslide;
- presents a phytosanitary risk;
- disturbs recreational uses of the forest;
- hinders regeneration;
- (and last but perhaps of greater importance than the above) is economical.

Fallen timber will not removed from Swiss forests if:

- extraction costs are higher than expected revenue;
- it might prevent landslides or erosion;
- it might aid regeneration;
- it is valuable for nature conservation. (Source: Messrs Y. Kazemi and R. Jenni from FAO/ECE/ILO Joint Committee tour, 2000.)

In all countries trees which were not uprooted, but either blown over or are leaning with some of their roots still in the earth, are being left until last for cutting.

Of the amount that will be removed from forests, veneer logs from large-diameter hardwoods like beech and white oak are the most valuable. Sawlogs for sawnwood and barrel production, especially of oak and beech, but also of spruce, fir (including Douglas fir) and pine will be of high value too when they did not sustain any damage. Therefore, the processing of these high-value logs has had priority in the clearing operations.

The small-diameter and damaged larger diameter logs for pulp, panel and fuel production will be the majority of the volume, but not all of this will be merchantable.

Competition for the low-priced pulpwood was keen between buyers for pulp, fuel and panel production.

The breakdown between hardwoods and softwoods varies by country. In Germany and Switzerland 20% was estimated to have been hardwood (*Tropical Timbers* (now *hardwoodmarkets.com*), February, 2000). In France, this ratio reaches 35%.

The breakdown between private and public forests varies by country. In Switzerland, 40% was in private and 60% was in public forests. In France, 14% of the volume of the fallen timber was located in state-owned forests, 20% in community-owned forests and the rest in private forests.

The value of the storm-felled timber varied considerably based on its quality (normal parameters of size, straightness, number of natural defects, plus potential quality reductions due to storm-related damage), location, degree of difficulty in harvesting and durability against fungal attack and bacteriological discoloration. For example, to avoid sharp price drops, it is necessary to move beech out of the forest as quickly as possible because of its susceptibility to discoloration.

3.3 Market effects: potential enormous imbalances mitigated through sector solidarity

3.3.1 Surplus supply on the forest floor

The sudden volume of roundwood on the ground sent shock waves through Europe's roundwood markets. However, prices for most wood products were relatively unaffected: sawnwood, panel and pulp prices did not change considerably with the lower raw material costs. The secondary-processed wood products, like furniture, cabinetry, joinery and other value-added products did not feel the roundwood glut as all effects had been dampened by this point in the chain.

Some mitigating factors exist: 1. the economic situation is good throughout most of Europe and Asia meaning a high demand for the roundwood and its products; and 2. the storms' occurrence in December gave some lead time to remove or store and protect logs before the threat of attack by forest pests or fire. Nevertheless, the heavy snows at higher elevations and the wet soils at lower elevations meant restricted logging in many forests.

3.3.2 Stocking roundwood to soften market impact

To stretch the roundwood oversupply over the longest time frame possible, many forest managers stocked logs in the forest, partly aided by government subventions in France, Germany and Switzerland. The German authorities went further and provided financial incentives to cover sawmills' increased inventory carrying costs for stocking sawnwood at the mill. For the same purpose, the French government granted low-interest loans.

Stocking has its costs and government assistance (e.g. subsidies for investment) was usually instrumental in inciting forest managers to initiate long-term storage. In Baden-Württemberg, Germany, 20% of the windthrown logs had been stocked in the forest or in adjoining areas as of May 2000 (*Le Bois National*, June, 2000).

The mechanisms for stocking roundwood assure protection against insect, fungal and bacterial attack and help to relieve market pressure. Submersion in water was used heavily in the 1990 storms, but was closely scrutinised this year because of potential water pollution from run-off, seepage into the ground water or direct pollution of the water body in which it is posed. As a result special storage ponds were created at a relatively high cost to protection against pollution. The protection against the runoff from log storage was a subject of debate between the forest sector and environmentalists.

The main method used for long-term storage of valuable logs remains water spraying, either close to the damaged forests, if the initiative comes from the forest owner or at the mill yard. The effect of spraying with water is the same as that of submersion: it keeps logs too wet for infestation by pathogens (insects and fungi).

Dry storage is also possible if the logs can be protected from bacteria, fungi and insects by covering logs and in some cases replacing the oxygen with other gases. Beech, which deteriorates in quality faster than other species, is sometimes stored dry to avoid water discoloration, but this is quite risky.

Logistics and transport proved to be severe bottlenecks in processing and distributing large volumes of wood. In Germany, there have been strong and successful efforts to increase transport capacities: by train, 200,000 m^3 per month, by ship, 150,000 m^3 per month, and by truck, 200,000 m^3 per month.

3.3.3 Price effects: universally down, but to varying degrees

Roundwood prices in France, Germany and Switzerland as well as in other affected countries in some cases fell sharply. Despite initial government measures or agreements between forest owners associations and the wood industry federation to suggest a 20% reduction in sawlog, veneer log and pulpwood prices, roundwood prices fell by more, initially by at least 30%. The solidarity in Switzerland between local industry and their nearby forest owners was broken when international buyers offered substantially lower prices but for massive volumes. Log buyers defended reduced prices citing the high incidence of breakage and loss in sawing due to fissures in broken logs. The same could not be substantiated for pulplogs and energy wood, yet they too were often offered at lower prices to rid forests of fuel for fire, insects and disease.

Despite government intervention, markets found their new equilibrium at considerably lower roundwood prices than before. When the price fell low enough, buyers, including foreign buyers, were enticed to purchase, aided by the fortunate strong demand for wood products in 2000. Beech was in surplus and it also has been in high demand over the last few years for furniture, cabinetry and panelling, not only in Europe, but even more so in China, Korea and Japan.

How much did roundwood prices drop? The price reduction ranged from 20 to 100% with many sawlogs sold from 20 to 50% below their values before the storm. High value logs sought by veneer, sawnwood and barrel manufacturers that did not sustain visible damage, especially oak, maintained high prices. Beech logs were sold at 20 to 60% reductions to avoid the first heat waves in May which accelerated degradation by fungal staining. Spruce logs in Switzerland dropped some 30% in price (graph 3.3.1). Some quantities of roundwood on smaller forests were simply given away to entice loggers to haul away a few downed trees.

In Germany, by mid 2000, fir logs at the roadside were 30 to 35% lower and spruce logs were down less, by 25 to 30% over pre-storm prices (*Le Bois Naional*, July 2000). Beech logs were down 15% and oak had not changed price from 1999.

In Switzerland the sawlog prices fell on an average by 27% over 1999 prices from January through April 2000 (Swiss Federal Bureau of Statistics, June 2000). Roundwood prices had been declining in general throughout 1999, and this 27% reduction is a weighted average of the drop in spruce and fir log prices by 27.6% combined with beech log prices of 22.8% against the 4 months preceding the December storms. The price change is perhaps only partly due to the storm surplus, sawlog prices have fallen by 41% since 1992.

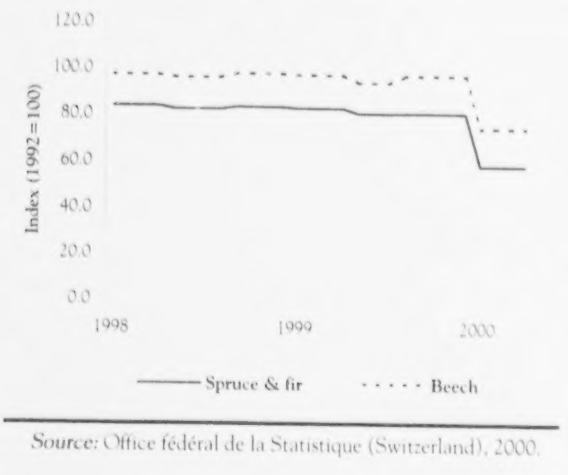
In France in the 2 months following the storm, pulpwood (also used for panels and fuel) and small-diameter logs were sold at a symbolic price. Average diameter sawlogs were down 70 to 80% from autumn 1999 prices. And large-diameter logs were selling at 50 to 80% of their pre-storm price depending on the species (*La Forêt Privée*, February 2000). Some higher-value logs of cherry and oak were reportedly purchased at premium prices, partly from concern for the near-future availability of needed raw materials in light of the harvesting freeze.

Pulpwood prices sunk. Competition from pulp, panel and energy producers did not buoy the market price (graph 3.3.2). In Switzerland pulpwood used for production of panels and pulp fell only by 4% from late 1999 to early 2000, much less than higher-valued sawlogs (Swiss Federal Bureau of Statistics, June 2000). In spite of the enormous supply of pulpwood, the prices of wood from the forest to the paper industry kept constant at the level of December 1999. But the prices of that wood to the wood-based panel factories fell by 17% in the period of January to April 2000.

Fuelwood prices fell in Switzerland at approximately the same rate as pulpwood, i.e. 3.9% between late 1999 and the first third of 2000 (Swiss Federal Bureau of Statistics, June 2000).

GRAPH 3.3.1

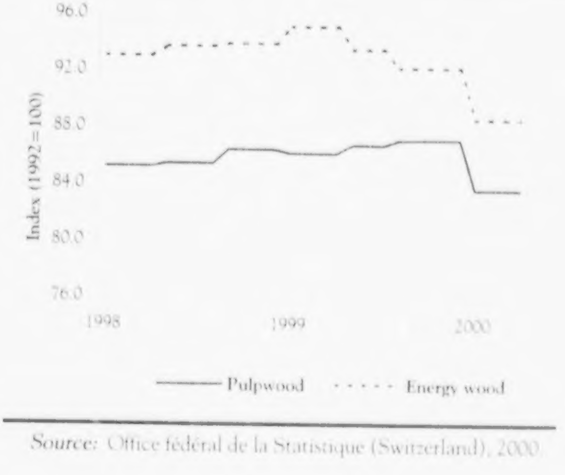
Sawlog prices in Switzerland, 1998-2000



Source: Office fédéral de la Statistique (Switzerland), 2000.

GRAPH 3.3.2

Pulpwood and energy wood prices in Switzerland, 1998-2000



Source: Office fédéral de la Statistique (Switzerland), 2000.

Fuelwood prices, for example fireplace wood, the highest valued fuelwood, dropped sharply. In urban areas such as Paris, firewood was sold at prices 75% lower than in early December 1999. This is rather normal in urban areas following catastrophes which fell street trees because they are much less desirable for sawmills due to the high incidence of imbedded metal and other foreign objects. Paris is a rather particular example however because of the enormous damage done to peri-urban forests (Bois de Vincennes, Bois de Boulogne and Forêt de Fontainebleau, among others, including national treasures such as the park and gardens surrounding the Château de Versailles). These forests have great value for leisure and recreation and the losses near the homes of millions of people sensitised them to the value of their forests. Hopefully the regeneration of these same forests and parks will be of educational value for the renewability of forest resources.

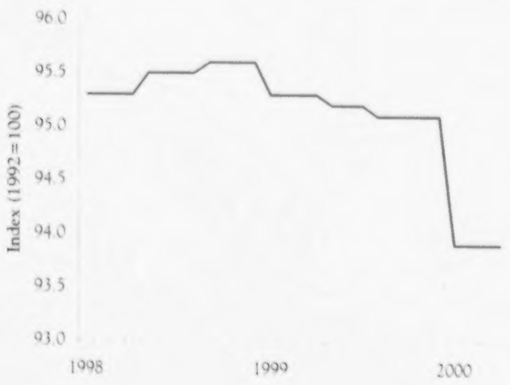
Initiatives described below to stimulate wood-based energy production did not have any immediate impact on fuelwood prices.

Sawnwood prices did not fall universally as a consequence of lower raw material costs. Sawmillers obtained lower yields from damaged stems, but were compensated by lower log costs. Beech sawnwood value fell slightly in Switzerland, but the graph may be misleading because of the combination of all quality levels (graph 3.3.3).

In Germany sawn hardwood prices may not necessarily have fallen only as a result of the storm (graph 3.3.4). Sawn softwood prices accelerated their 18-month decline, but this is probably due to overall market factors, not the temporary over-supply of roundwood (graph 3.3.5).

GRAPH 3.3.3

Spruce and fir sawnwood prices in Switzerland, 1998-2000

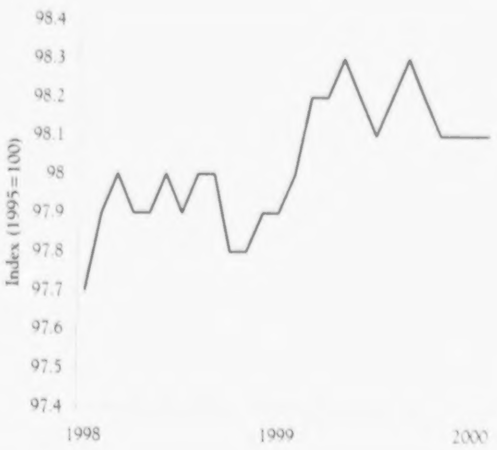


Source: Office fédéral de la Statistique (Switzerland), 2000.

The freeze on harvesting any standing trees in France, Switzerland and Germany which went into effect immediately after the storms meant that mills located outside of the damage zones have had to use raw material from regions affected by the storm. This imposed higher transportation costs, some of which were mitigated by government subventions or amendment of regulations in

GRAPH 3.3.4

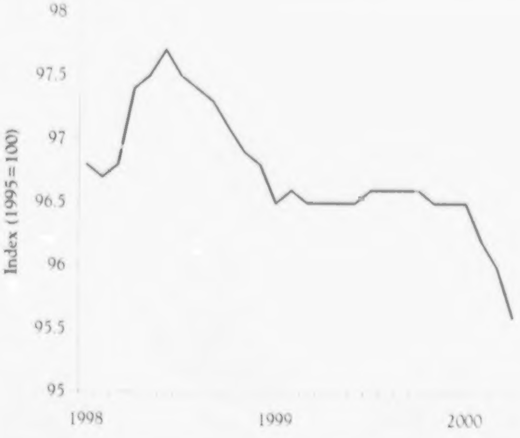
Sawn hardwood prices in Germany, 1998-2000



Source: Statistisches Bundesamt, 2000.

GRAPH 3.3.5

Sawn softwood prices in Germany, 1998-2000



Source: Statistisches Bundesamt, 2000.

favour of the timber transport. Despite solidarity in the forest and forest industries sector, the consequence of frozen harvests in forests which escaped the storms' damage meant costly inefficiencies in 2000. Sawmills "blessed" with surplus raw material in the storm zone had lower cost raw materials those mills "saved" from the storms that had to buy logs from unusually greater distances due to frozen national cuts (graph 3.3.6).

In Switzerland sawn spruce and fir prices registered a 1.2% average decline from pre-storm prices (Swiss Federal Bureau of Statistics, June 2000). The weak prices were especially apparent in lower quality sawnwood for packaging. As in roundwood, some of the decrease may be due to other factors because sawnwood prices are down over 6% from 1992.

Owners of small and large forests were the immediate losers from the storms. Not only did they face devastation of decades of planned forest management, in which their carefully-planned sustainable harvest schedule was destroyed, but they also incurred high costs of storm clean-up. These costs were not always compensated by sales of logs, especially when some logs were damaged or of less-valued species and sizes.

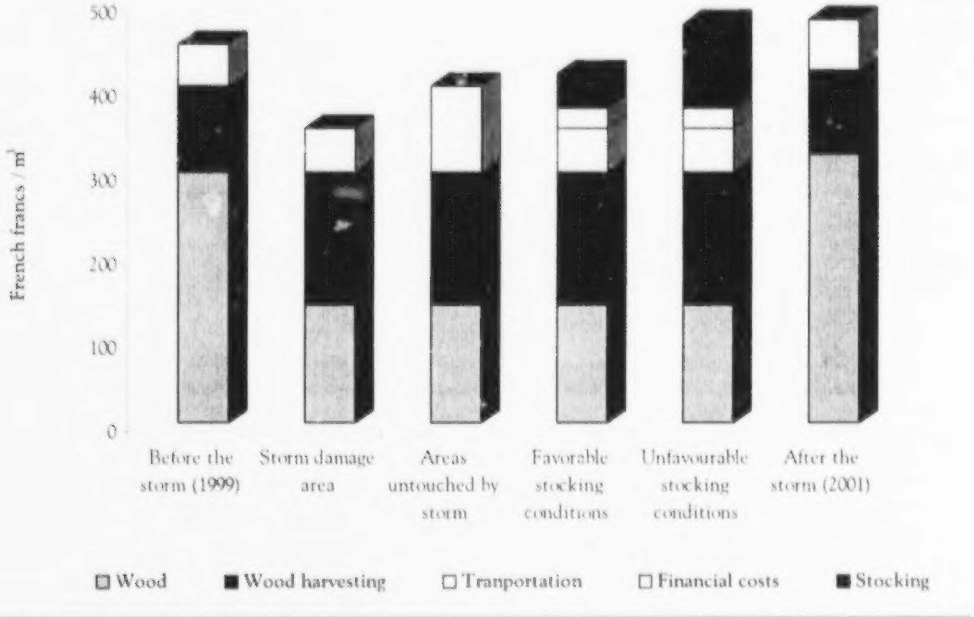
Some foreign logging crews were brought into the most damaged areas and some brought efficient harvesting equipment. There were more crews waiting to assist but unfortunately regulations about hiring temporary workers from certain countries, especially outside the EU, caused delays.

The trade press is to be commended for quickly publishing warnings to loggers untrained in the dangers of cleaning up after windstorms. Universally the first objective in the sanitation fellings was to protect loggers from any injury. But unfortunately this objective was not met and as happens each time, injuries were sustained and lives lost. More than 40 people sustained fatal injuries, all to untrained, non-professional forest workers and more non-fatal injuries were incurred according to reports to the June 2000 FAO/ECE/ILO Joint Committee on Forest Technology, Management and Training.

The Timber Committee established a clearinghouse for information and also published press releases calling attention to potential dangers. The Joint FAO/ECE/ILO Committee had published an *Acute Forest Damage Manual* [2] following the 1990 storms and it too was put on the website.

GRAPH 3.3.6

Additional costs of spruce and fir logs from storm damaged forests in France, 1999 to 2001



Note:.As of July 2000, roughly 7 francs=$1.

Source: Fédération Nationale du bois, 2000.

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[2] ECE/TIM/DP/7.

3.3.4 *Production effects: difficulty in measurement at this early stage*

Obviously there has been an increase in roundwood removals from storm-damaged forests. But are these increases compensated by reduced harvests elsewhere in the countries as anticipated? The answer will only show in statistics for 2000 which will be received around March 2001.

And if there was increased roundwood produced, was it being turned into increased production of sawnwood, cants or sleepers/railroad ties? The first forecasts of production statistics will be available at the Timber Committee Session in October 2000 and any increases in production should show for sawnwood, panels and roundwood. Even then it may be difficult to determine whether increases in production are a result of demand-pull or supply-push, although this may show in strength of prices.

One case example for 1.3 million m^3 of wind-thrown roundwood in Switzerland sheds light on the initial resolution of the problem during the first quarter of 2000, i.e. through 31 March (table 3.3.1).

3.3.5 *Trade flow effects: traditional channels strengthened and new ones established*

One of the more positive outcomes of the windstorms was that they dispersed roundwood and sawnwood to new countries and in greater volumes. The trend in rising exports of European beech to China and other Asian destinations was documented last year in the *Review*. Now in 2000 there has been a massive increase in exports to China, in part due to dramatically rising consumption of roundwood (see special chapter 5 on China's forest products markets).

Switzerland, which had rarely exported logs to Austria, concluded a deal in early 2000 to export significant volumes of sawlogs. The traditional export market for roundwood with Switzerland is Italy, and fortunately the strong demand led to increased exports during the first quarters of 2000. Additional volumes of Swiss roundwood found markets across the border in France and Germany. All countries faced with large volumes of roundwood to sell have abandoned their desires to produce higher value-added exports and have been forced to export logs.

TABLE 3.3.1

Resolution of windthrown timber in one forest area in Switzerland, 2000

Destination	*Volume (1,000 m^3)*	*%*
Left with attached roots	440	34
Permanently left in forest	400	31
Harvested and sold	350	27
Wet storage	100	8
Dry storage	10	1
Total	1,300	100

Source: Service des forêts et de la faune du Canton de Fribourg (Switzerland), 2000.

An unexpected trade has developed *between* the countries most affected by the storms. First quarter trade reports are showing beech roundwood imports by Germany from France have increased roughly 60% in the first quarter of 2000 compared to 1999 (*ZMP*, 2000) (table 3.3.2). Germany's exports of beech roundwood to France fell by 27% during the same period, but Germany exported 14 times more beech roundwood to Switzerland (table 3.3.3).

TABLE 3.3.2

Imports of beech roundwood by Germany, 1999-2000

(m^3)

From	*January 1999*	*March 2000*	*% Change 1999 to 2000*
France	11,151	17,543	57.3
Switzerland	1,389	3,548	155.4
Denmark	1,427	3,319	132.6
Belgium	1,050	2,747	161.6
Romania	1,892	2,369	25.2
Czech Republic	1,477	1,658	12.3
Luxembourg	-	1,622	+++
Poland	1,322	1,140	-13.8
Slovakia	983	1,019	3.7
Other	3,361	2,847	-15.3
Total	24,052	37,812	57.2

Note: "+++" indicates increase over 300%.

Source: *ZMP*, 2000.

While omitted here for sake of presentation, *ZMP* also reported the unit value of the first quarter trade of beech roundwood. As roundwood includes many assortments for many uses, it is impossible to distinguish from customs statistics what countries imported veneer logs, which imported sawlogs and which imported pulpwood. Nevertheless some conjectures can be made that Germany imported high-quality roundwood from France and Switzerland in 2000, as the unit values were DM546 and DM583 respectively, both higher than for all other countries with the exception of the smaller volumes imported from Poland and Slovakia.

The astonishing development in Germany's exports of beech logs following the storms is the quadrupling of volume to China. Now the main export destination for beech logs, China takes a 30% share of Germany's exports of this valuable raw material. The export unit value was DM490, 44% lower than in 1999. What could only be described as new trade channels in 2000 for beech roundwood, tremendous increases of roundwood were shipped to Poland and Switzerland, but at very small unit values, DM6 and DM26 respectively. Denmark, which also suffered substantial damage in the December storms to its beech forests, also increased imports of German roundwood in early 2000, by over 3 times compared to 1999.

The German trade of beech sawnwood gives some indications of new market channels (table 3.3.4). As in roundwood, the big increase was exports to China, which rose over 3 times to reach approximately 41,000 m^3 according to preliminary reports (*ZMP*, 2000). While the unit value at DM806 was down 27.4% from 1999, it was among the highest unit values, indicating the better qualities of sawnwood. Over 40% of Germany's exports also went east, to the Czech Republic and to Poland. However their much lower unit values at approximately DM30 indicate that this could have been low-quality, pallet and packaging wood. While beech roundwood exports to Spain fell off in the first quarter of 2000, sawnwood exports advanced.

Germany's imports of beech sawnwood give evidence additional evidence of strengthening of some traditional supply sources, however these imports are only 15% the volume of exports (table 3.3.5). Greater volumes of beech sawnwood were imported from France in early 2000 while imports from Switzerland dropped. Despite surplus volumes of beech roundwood available, German imports of beech sawnwood increased about 13% over 1999 (*ZMP*, 2000). Sawn softwood imports rose 4% in the first quarter of 2000 to reach 1.1 million m^3, roughly twice as

TABLE 3.3.3

Exports of beech roundwood from Germany, 1999-2000

(m^3)

To	*January 1999*	*March 2000*	*% Change 1999 to 2000*
China	45,203	184,299	307.7
Poland	1,108	117,190	+++
Switzerland	8,871	96,984	+++
Sweden	64,953	67,640	4.1
Denmark	15,394	51,885	237.0
Italy	19,372	32,572	68.1
Hongkong SAR	23,422	26,941	15.0
Austria	10,768	8,437	-21.6
Japan	1,691	6,767	+++
France	8,076	5,890	-27.1
Netherlands	1,829	5,890	222.0
Taiwan PoC	3,176	3,190	0.4
Turkey	-	1,076	+++
Other	11,322	4,433	-60.8
Total	215,185	613,194	185.0

Note: "+++" indicates increase over 300%

Source: *ZMP*, 2000.

TABLE 3.3.4

Exports of beech sawnwood from Germany, 1999-2000

(m^3)

To	*January 1999*	*March 2000*	*% Change 1999 to 2000*
Czech Republic	1,345	57,399	+++
Poland	2,391	58,273	+++
China	12,272	40,514	230.1
Spain	21,951	28,687	30.7
Hongkong SAR	18,107	12,530	-30.8
UK	8,648	9,784	13.1
Netherlands	7,746	9,578	23.7
Italy	8,023	9,295	15.9
Sweden	835	6,099	+++
Denmark	2,357	2,377	0.8
Belgium	1,339	1,639	22.4
Finland	1,840	1,492	-18.9
Austria	915	1,408	53.9
Other	7,838	35,184	+++
Total	95,607	274,259	341

Note: "+++" indicates increase over 300%.

Source: *ZMP*, 2000.

TABLE 3.3.5

Imports of beech roundwood by Germany, 1999-2000

(m^3)

From	*January 1999*	*March 2000*	*% Change 1999 to 2000*
Romania	9,365	5,523	-41.0
Poland	6,350	5,383	-15.2
Slovakia	3,311	5,136	55.1
Czech Republic	4,937	4,88[illegible]	-1.0
Bosnia & Herzegovina	1,000	4,556	+++
Austria	1,113	3,596	223.1
France	2,984	3,566	19.5
Ukraine	1,170	2,136	82.6
Yugoslavia	1,837	1,316	-28.4
Switzerland	1,147	1,076	-6.2
Other	3,455	4,248	23.0
Total	36,669	41,425	13.0

Note: "+++" indicates increase over 300%.

Source: *ZMP*, 2000.

large a volume as sawn softwood exports which rose by 52% to reach over 500,000 m^3. Some of the largest volumes and greatest increases over the first quarter of 1999 were from France and Switzerland.

The table of Germany's first quarter exports of beech sawnwood has countries arranged in descending order by their 2000 volumes. If they had been ordered by 1999 volumes, Spain would have been first. However, in 2000 the first 3 places are taken by the Czech Republic, Poland and China. Reports from France indicate that substantial volumes of high quality sawn hardwood and roundwood are being shipped over the border to Spain, presumably at prices which make the French supply more advantageous. The windstorms in France also hit the Douglas fir producing region north of Spain, and some of these volumes were also exported south.

In the first quarter of 2000, German exports of coniferous roundwood (logs and pulpwood) rose to most destinations, except the storm affected countries of Denmark, France and Switzerland (as well as Norway and Spain) (table 3.3.6). Imports of coniferous roundwood also rose, even more strongly (+69% between the first quarter of 1999 and 2000) (table 3.3.7). The main increases concerned Russia (+232%), France (+113%), Finland (+118%), Denmark (+423%), Sweden (+373%), Latvia (+254%) and Luxembourg (+473%). This list indicates two main factors:

- Imports of storm-damaged roundwood from France, Denmark and Switzerland; and
- Imports from countries all around the Baltic to large new mills (sawmills and a pulpmill) located in north-eastern Germany, which have come on stream recently.

TABLE 3.3.6

Exports of coniferous roundwood from Germany, 1999-2000

(m³)

To	*January 1999*	*March 2000*	*% Change 1999 to 2000*
Austria	301,926	356,478	18.1
Czech republic	160,905	183,038	13.8
Italy	70,938	115,572	62.9
Sweden	55,948	71,279	27.4
Belgium	22,469	32,088	42.8
Denmark	26,851	17,937	-33.2
Finland	13,034	17,043	30.8
Norway	21,590	13,558	-37.2
Netherlands	7,561	8,082	6.9
France	7,064	6,970	-1.3
Japan	7,981	8,076	1.2
Switzerland	5,540	5,269	-4.9
Other	6,799	12,705	86.9
Total	708,606	848,095	19.7

Note: "+++" indicates increase over 300%.

Source: ZMP, 2000.

Some volumes of storm-felled logs were traded over the internet. A few electronic marketplaces were set up to trade roundwood, as well as coordinate the movement of machinery and harvesting crews.

TABLE 3.3.7

Imports of coniferous roundwood by Germany, 1999-2000

(m³)

From	*January 1999*	*March 2000*	*% Change 1999 to 2000*
Russia	55,093	183,144	232.4
Belgium	113,193	150,300	32.8
Czech Republic	96,615	80,238	-17.0
France	26,703	56,966	113.3
Finland	23,257	50,848	118.6
Estonia	66,044	47,864	-27.5
Denmark	7,083	37,040	+++
Sweden	7,811	36,953	+++
Switzerland	17,297	29,817	72.4
Lithuania	7,177	20,159	180.9
Netherlands	10,830	24,501	126.2
Luxembourg	2,640	14,569	+++
Other	9,810	11,435	16.6
Total	443,553	743,834	67.7

Note: "+++" indicates increase over 300%.

Source: ZMP, 2000.

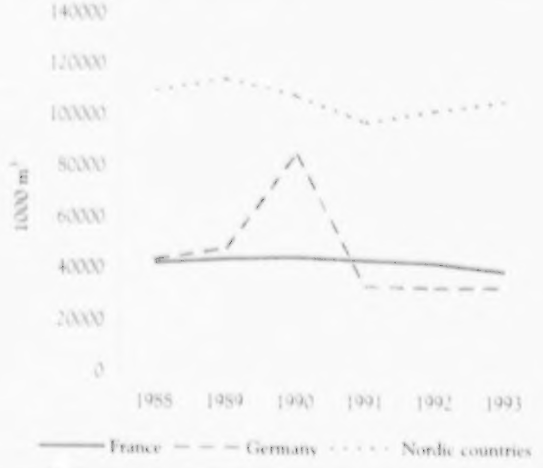
3.4 Comparisons with 1990 market effects: similar problems and solutions

The last really large storm to hit Europe was in February 1990 when over 115 m^3 of wood was felled mostly in Germany. It is interesting to trace the consequences of the 1990 storm as a guide to possible consequences of the 1999 storms. Disruptions to forest products markets occurred following the February 1990 storms as evidences by discontinuity of trends in roundwood production (removals) and trade. The comparisons to the earlier storms are complicated by the initiation of the transition process in 1990 from planned to market economies for some of the countries involved in the storm, e.g. in Poland as well as the reunification of Germany leading to breaks in statistical series just at the crucial time. At the time of writing this chapter, the Swiss government is commissioning a study on the comparisons between the 1990 and 1999 storms. Hopefully some preliminary findings will be presented at the Joint Timber Committee and European Forestry Commission Session in October 2000 at their special topic discussion on the storm damages.

From the TIMBER database some changes in trends indicate possible effects of the 1990 storms on forest products markets for that year and the following year or two. Roundwood removals went up in 1990 and then fell off in 1991 to compensate (graph 3.4.1). Weak forest products demand in the early 1990s makes it difficult to isolate the storm's effects on markets in 1992 and 1993.

GRAPH 3.4.1

Roundwood removals in selected European countries, 1988-1993



Source: ECE/FAO TIMBER database, 2000.

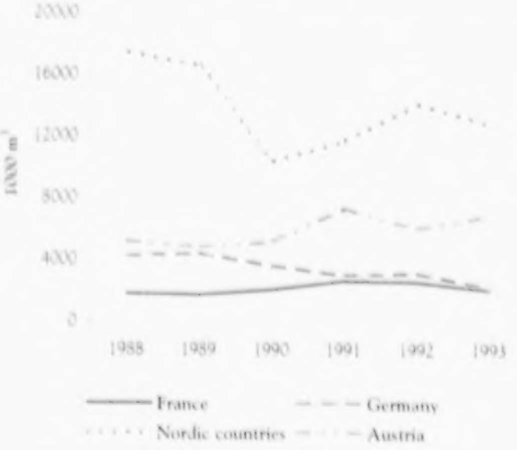
As in 2000, trade of roundwood accelerated in 1990 with Austria, Sweden and France buying large volumes of storm-felled roundwood (graph 3.4.2). Conversely, Germany which was hardest hit by the 1990 storm imported less and exported great volumes in 1990 and 1991 (graph 3.4.3). Similar to the situation in early 2000, the waves of market effects seem to have dampened before being reflected in the statistics after primary processing of sawnwood and panels.

The general economic state is beneficial in 2000 to stimulate the markets for the storm-damaged wood. However in 1990 the demand for construction was low in western Europe and the period of economic transition had just begun in central and eastern Europe. This year considerable quantities of roundwood and sawnwood, sometimes of lower qualities, have found markets in central and eastern European countries. Unfortunately in 1990 these same options were not available due to the economic and political situations.

In Switzerland the downward pressures on roundwood prices have been greater in 2000 than in 1990 (Swiss Federal Bureau of Statistics, June 2000). Hurricane Vivian, which struck Switzerland on 27 and 28 February 1990 felled almost 5 million m³ of timber (roughly 40% of the 1999 volume). The drop in spruce and fir sawlog

GRAPH 3.4.2

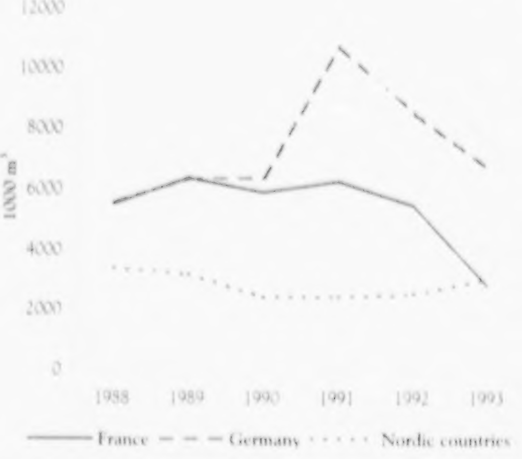
Roundwood imports in Europe, 1988-1993



Source: ECE/FAO TIMBER database, 2000.

GRAPH 3.4.3

Roundwood exports in Europe, 1988-1993



Source: ECE/FAO TIMBER database, 2000.

prices in 1990 averaged 16% (versus 28% in 2000) and beech sawlog prices fell 9% (versus 23% in 2000). Part of the explanation for the difference, other than the large disparity in windthrow volumes, was that in 1990 the storm's assault was at higher alpine valleys where coniferous species dominate. In 1999 the winds swept the Plateau Region in Switzerland between the Jura and Alps Mountains leaving more beech on the ground.

Another difference, not completely documented, may be the call in 2000 by some environmentalists for no intervention to clear up the damage. In Switzerland some new nature reserves were created where none of the damaged material would be salvaged. Other areas where there was no intervention in Switzerland were steep slopes where the fallen trees would promote regeneration, at least by blocking avalanches and rock slides. It is possible that some of these steep areas are inaccessible and thus where harvest costs and risks are greater than anticipated revenues. It also appears that there were less environmental restrictions in 1990 to establishing lake storage facilities.

3.5 Assistance by governments: quick and multi-dimensional responsiveness

Some government assistance was necessary following this natural disaster if the maximum amount of wood was to be brought to market and help provided to victims of the storms. In France, Germany and Switzerland, governments responded to the disasters by setting up a variety of means to assist the forest and forest industries sector. Many forest owners in these countries do not have any insurance against natural disasters, although it may be purchased. Many owners depend on governments to rescue them from such calamities, however there seem to be more discussions now about insurance schemes, either private, through associations or via governments.

3.5.1 France

In France measures were taken to stabilize markets by encouraging stocking of logs in forests in areas where they could be protected by water. But first forest roads had to be cleared and the government offered low-interest loans, 1.5% per year, for a maximum of 3 years, to assist in clearing the forests and stocking logs. Approximately $1 billion over 10 years was pledged to prepare forests for replanting and to replant. Additional funds were provided to reopen forest roads, take phyto-sanitary measures and to mobilise forest workers and equipment. Transportation was a bottleneck and weight limits on logging trucks were eased as well as subventions to assist in rail transportation. When France froze harvests of undamaged stands, financial assistance to offset increased transportation costs of storm-felled logs to mills in lesser damaged areas became essential to support the sector. In total, in early 2000, the French government allocated 2.5 billion francs (approximately $400 million at 6 francs/$) for the year plus another 12 billion francs (approximately $2 billion) in low-interest loans. While this will initiate important steps, the industry and forest owners claimed that these amounts were insufficient.

Halting the harvest of forests outside the damage zone had direct consequences for communities depending on the revenues of their forests. To them it seemed an oxymoron to have been spared of the damaging winds, but to have been prohibited from cutting in 2000! To reverse the situation where everyone is equally penalised, to a situation where everyone equally loses the least, the government provided low-interest loans to communities, both those hit by the storms as well as those whose forests were spared, but yet whose harvests were blocked in 2000.

3.5.2 Germany

Germany invoked the Forest Damages Compensation Act which immediately reduced harvests by 30% outside the windthrow areas. It also provides assistance and tax relief to forest owners. In contrast to France, there were no transportation subsidies, although weight restrictions on trucks were eased from 40 tons up to 46 tons. Despite some increased transport by rail and inland waterways, transportation remained a bottleneck in early 2000.

Subsidies and low-interest loans were made available for purchase of machinery and engaging emergency workers. The federal *laender*, specifically Baden-Württemberg and Bavaria earmarked approximately $60 million for removals of windfall timber, establishment of storage, reconstruction of roads, reforestation and transport to storage sites.

Additional funds were made available for promotion of the ecological qualities of timber products and further development of wood energy.

3.5.3 Switzerland

The priorities of the Swiss government were to 1. avoid accidents, 2. avoid damage to nearby forests, and 3. to use the fallen timber. To extend the processing time, 26 million Swiss francs (about $43 million) were provided for establishing stocking facilities to reduce market pressures. Funding was supplied to train loggers in order to avoid accidents and to provide harvesting credits (loans) to advance cutting.

Additional sums are allocated for promotion of the sector and to promote increased wood energy. It might be noted here that during the last few years, a number of European countries which are dependent upon nuclear energy, including Switzerland, have declared that they will shut their reactors and turn to alternatives, including bio-fuels. Thus governments are currently favourable towards wood-based energy development.

In order to avoid the loss of money by harvesting timber which will never find an appropriate market and in response to ecologists demands, at least 3 million m^3, or 25% of the storm-damaged timber will be left in forests and some new nature reserves have been established.

Additional monies are pledged to undertake studies of the 1999 storms and to compare them to the situation in 1990 in order to be better prepared the next time. Case studies are being written on how forest owners and sawmillers coped with the crisis. More comprehensive analyses than this one are planned to document the consequences on the wood industry in Switzerland and how it impacted and was impacted by neighbouring countries.

3.6 Positive outcomes?

It is not the intention to minimize the disaster and its losses. However some more positive aspects merit mention.

The public relations opportunities of the storms were endless and experts in governments, state forest services and forest owners associations were busy responding to journalists while capitalising on the public's attention. The forest and forest industry sector received considerable attention during the first quarter of 2000 as the media covered the crisis. Foresters were shown as emotional individuals who were shocked when their years of sustainable management were destroyed. They explained that the best forest management plans cannot anticipate catastrophes like this, but that regeneration after a natural windstorm is no different than regeneration after a clearcut or a forest fire. Given introspection by the media into the local storm damages, the public sympathised with residents of small communities whose livelihood was jeopardised by loss of the local forest resources.

Losses of trees in a forest are different than losses of favourite urban trees along streets and in parks to a concentrated population. City dwellers mobilised to help clear debris and then stood back and realised that the urban landscape had been changed, at least in the short term. Fund-raising and collections were initiated to restore urban parks and forests. Private citizens can buy their own tree planted in the gardens of the Chateau de Versailles in France. In Switzerland school children replanted damaged forests and returned to care for their trees and watch them grow.

Governments and public officials were found to be concerned and compassionate for the plight of the forests and the forest-based industries. The attention towards the sector will be maintained over the medium term as loans are paid back and the industry and forest restores its equilibrium. Some of the funding will be beneficial in the long term for the sector too when it leads to development of capacity, for example in the promotion of wood energy, or modernization of harvesting equipment. Networks of fuelwood distributors were established or extended.

One positive outcome from the solidarity of a crisis is the teamwork that surfaces to help each other. Some forest owners associations were strengthened as a result of the common cause. Forest owners and managers that hired efficient logging crews got a lesson in efficient, mechanized and safe harvesting practices. These managers will consider re-engaging skilled professionals with modern equipment for future silvicultural treatments.

3.7 Conclusion

This chapter illustrates some of the initial effects on forest products markets in Europe as a result of the December 1999 storms. The magnitude of the damage is daunting but the resilience of the forest and forest industry sector in restoring calm so quickly is commendable. Unfortunately the effects of the storm will endure for decades in some localities where their forests were devastated. Certainly new forests will be generated, however for some small and medium-sized enterprises dependent on a local wood resource, the delay and the increased transportation costs in the interim may be too much.

Undoubtedly the effects of the storm will influence the statistics for the next couple of years, especially in the form of increased trade within Europe and increased exports to Asian markets too. The effect on removals may be mitigated by the use of stored logs in the forest and adjustments to normal harvest schedules in unaffected forests. If merited, further analysis will be undertaken in the *Review* next year as better statistics are available for removals, production, trade and prices.

Some positive outcomes must be considered too, such as valuable public relations opportunities, new export markets, new transportation and manufacturing capacity, increased production of wood energy, modernisation of some harvesting and sawmill equipment, new training and experience of loggers and a strengthened solidarity of the sector.

Chapter 4
Poland's Forest Products Markets [1]

Highlights

- Poland's wood industry is among the forerunners to emerge from the 10-year period of transition and transformations, 1989 to 1999, as indicated by dramatic rises in production and exports.
- Liberalization of foreign trade in 1995 stimulated exports, mainly to western Europe, and predominantly to Germany. In 1999 Poland exported twice as much sawnwood, 8 times more particle board, 9 times more paper and paperboard and 12 times more furniture than in 1989.
- Furniture is the fastest-growing export product, primarily to western Europe, and this sector holds tremendous potential for further development and will be the driving force behind the development of wood industry.
- In comparison with other branches of Polish economy, the forest and forest industries sector is relatively well prepared for integration into the EU.
- Positive net trade in wood products reduces the national negative foreign-trade balance.
- A certified wood market has not yet developed in Poland.
- New associations and organizations within the wood sector were established during the last 10 years of political and economic transformations.
- In Poland the per capita consumption of wood products, with the exception of particle board, is low compared to EU countries.
- Production of MDF started in 1994 and OSB in 1997 and demand by export markets has grown rapidly.
- The Polish forest and forest industries sector is characterized by a high degree of raw material self-sufficiency, however industrial roundwood imports are increasing.
- Forest cover, of which over three-fourths is state owned, is forecast to grow to over one-third of the total land.

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Secretariat introduction

This chapter is one of a continuing series of chapters focussing on one ECE region country's forest products markets. This chapter was written by Dr. Wladyslaw Strykowski, Deputy Director and Dr. Ewa Ratajczak, Head of Wood Industries Economics Department, Institute of Wood Technology, Poznan, Poland. We thank Dr. Strykowski and Dr. Ratajczak for their valuable contribution to understanding the current situation in one central and eastern country that is progressing following the transition to a market economy. Their in-depth analysis focuses on the successes of the wood industry in preparing for integration into the European Union. However, the process has been difficult and that aspect of the story is not told here. The 2001 Joint Timber Committee and FAO European Forestry Commission Study Tour has proposed to visit Poland with a theme of the steps being taken by the forest and forest industries sector in preparation for EU integration.

4.1 General economic developments

In the second half of the 1990s Poland was one of the most dynamically developing countries in central and eastern Europe as reflected by basic macro-economic indices (table 4.1.1). This rapid growth slowed slightly at the end of 1998 and beginning of 1999 as a result of the implementation of federal policies to cool down the economy.

The deterioration of general economic conditions was demonstrated by slower growth of GNP and of investment expenditures as well as in the rise of unemployment. These phenomena were further accompanied by the increase in foreign trade deficit which reached 74 billion Polish zlotys ($18.6 billion). The wood products foreign trade balance in 1999 was positive and amounted to $1.3 billion.

The increase in the number of unemployed, over 2.5 million in February 2000, can be attributed to the Russian crisis, worsening economic conditions in western Europe as well as to the on-going restructuring processes of Polish industry (mainly smelting and coal mining industries).

On the other hand, in 1999 and in the first quarter of 2000, as a result of relatively high foreign investments, an increase in employment could be observed in the wood, furniture and pulp and paper industries. Total foreign investment was estimated by the State Agency for Foreign Investment at the end of 1998 at $100.1 billion. The biggest investors in the forest-wood sector included International Paper Company from the United States which invested $370 million in the paper industry and Kronospan (particle board and OSB) from Switzerland with an initial sum of $300,000.

TABLE 4.1.1

Polish economic indicators, 1996-1999

(% annual change)

Specification	*1996*	*1997*	*1998*	*1999*
Gross national product	6.0	6.8	4.8	4.1
Investments	19.2	22.2	15.8	17.1 [1]
Inflation	19.9	14.9	11.8	7.3
Rate of unemployment	13.2	10.3	10.4	13.0

[1] Initial data, enterprises employing more than 5 persons.

Source: "Information on Socio-Economical Situation of Poland", *Statistical Bulletin for 1995-2000*, Central Statistical Office, Warsaw, 2000.

When analysing data concerning industrial production for 1999, it is worth noting that there was an increase of wood and wood products output by 15.5% and of furniture production by 8.5% over 1998.

4.1.1 Development of the building and construction industry

In 1996-1999, mean annual growth of construction expressed in fixed prices was approximately 10%. The situation was much worse in the housing industry, in which there had been a regression for several years, because there is no coherent system of economic incentives. Between 1995 and 1999, only 70 to 80 thousand flats were built annually. This level of production can be compared to that of the 1950s. This explains why the housing deficit in relation to needs is estimated at 1.5 to 2 million flats.

The situation in the building and construction industry exerts a direct impact on the wood product market. Moreover, construction can stimulate or constrain consumption either directly (via the application of a given wood product in a housing unit which is either being built or repaired) or indirectly (as a consequence of needs connected with interior wood uses e.g. furniture). Generally speaking, the indirect impact of the demand associated with the development of building and construction industry is delayed and begins to show several years after the completion of a housing complex.

4.1.2 Wealth level of society

The primary and most general wealth determinant of a given society is the level and rate of growth of GNP. The demand for goods is influenced by the share of consumption in GNP and the level of disposable income (table 4.1.2).

Generally speaking, it can be said that after a period of considerable impoverishment of Polish society at the beginning of 1990s, a slow, albeit systematic, improvement of living standards has been observed as

TABLE 4.1.2

Consumption vs. gross national product in Poland, 1995-1999

(% of GNP)

	1995	*1996*	*1997*	*1998*	*1999*
Consumption	77.8	79.6	79.6	78.9	
of which:					
Individual (from personal income)	63.7	62.2	62.6	63.4	63.2

Sources: For years 1995-1998, *Statistical Yearbook 1999*, Central Statistical Office; for 1999, *Statistical Bulletin 2000*, No. 2, 2000.

evidenced by an increase in individual consumption from personal income.

This trend is well illustrated by the level of gross monthly remuneration in Poland which, in 1999, averaged $463 with $470 in industry in general of which: in wood industry – $358, furniture industry – $342 and in pulp and paper industry – $522. The growth rate of mean gross real remuneration in 1999 was 3.4%.

4.1.3 Demographic factors

Demographic and social factors exert a significant impact on the demand for furniture and wood products. The population has stabilized over the last 5 years at 38.7 million, of which approximately two-thirds live in urban areas. Roughly two-thirds, 23.9 million, are of working age. Some 51% of the population is women.

On the basis of national statistics, it can be said that the structure of Polish society, due to preferences of individual groups of its population and their purchasing behaviour, exercises an important influence on the demand for wood products. First and foremost, it is the demand for end-products such as furniture, houses made of wood and flooring materials. This, in turn, affects the size and structure of the demand for various types of wood materials.

4.2 Forest resources

In 1998 the area of *forests and forest lands* in Poland associated with the forest economy was 9 million hectares, of which forests made up 8.8 million hectares corresponding to 28.2% forest cover. Bearing in mind economic and natural conditions prevalent in Poland, it is believed that forest cover of Poland could be increased to 34% of its total area. It is estimated that it will be possible to achieve this percentage point increase in forest cover in Poland in the middle of the next century.

The forest ownership structure above clearly shows the dominant share, 78.4%, of forest owned by the State and managed by State Forests (table 4.2.1). A national debate has been going on in Poland for some time now concerning the problem of re-privatization or privatization procedures of forests. The scale of re-privatization is determined by forests nationalized earlier the total area of which amounted to 4.9 million ha. It is quite likely that former owners will obtain compensations from the state, but it has not been decided yet as to the form of these compensations.

Private forests make up 17.1% of the total forest area in Poland of which 16% belongs to over 900 thousand individual owners. Private forests are characterized by excessive fragmentation so that the average area owned by one owner is less than 1 ha. Harvesting of timber in privately-owned forests is less than half of public forests mainly due to lower ages of forest stands and less efficient management.

For several years now we can observe in Polish forests a steady increase in the proportion of hardwood species in relation to softwoods. The proportion of hardwood species in stands increased from 21.9% in 1990 to 23.0% in 1999. However, despite these favourable processes, softwood tree species remain dominant, making up 77% of total forest area, of which pine and larch make up 69%. Generally speaking, it can be said that Polish forests are relatively young. Stands of lower age classes (up to 40 years old) are dominant, constituting more than 41% of forest area, while the share of adult trees (over 80 years of age) take up about 17%. Consequently, stand utilization will increase when a visible change in their structure takes place. Average stand age in State Forests is 55 years, while in private forests it is 36 years.

TABLE 4.2.1

Structure of forest ownership in Poland

	1,000 ha	*%*
Total forests	8,813	100.0
Public	7,304	82.9
Owned by State Treasury	7,226	82.0
of which:		
Managed by State Forests	6,915	78.5
National parks	181	2.1
Owned by communes	78	0.9
Private	1,509	17.1
of which:		
Property of individual owners	1,415	16.1
Land cooperatives	68	0.8
Others	26	0.3

Sources: For years 1995-1998, *Statistical Yearbook 1999*, Central Statistical Office; for 1999, *Statistical Bulletin 2000*, No. 2, 2000.

In 1999 wood resources (growing stock) amounted to 1.6 billion cubic meters of large timber, of which nearly 86% was found in State Forests. Mean resources calculated per hectare amounted to 184 m^3/ha, with 201 m^3/ha in State Forests and 118 m^3/ha in private forests. The annual increment of forest resources in Poland is estimated at 56 million m^3, while the current level of removals averages 32 million m^3 or 57% of the annual increment.

Although a steady improvement in forest condition has been observed since 1995, it still leaves a lot to be desired. In 1999 30.7% of trees showed severe damage because of air pollution and, in comparison with other European countries, this level of damage is estimated as very high. Also in 1999, 60 thousand hectares of land were either renovated or afforested in State Forests. Additionally, the total of almost 12 thousand ha of formerly agricultural land or wasteland was afforested as part of the scheme to increase the level of forest cover. Table 4.2.2 shows the amount of felled wood taking into account different forms of ownership.

In December 1999 strong winds caused considerable losses in Polish forests. It is estimated that approximately 2.2 million m^3 of mainly medium-sized spruce, pine and fir was damaged by those winds.

4.3 Institutional framework for forest and forest industries

Following forest sector transformation, the forestry sector and wood industry were separated. In 2000, forestry is the responsibility of the Ministry of Environment. The Department of Forestry, Nature and Landscape Protection is responsible for the co-ordination of forest policies and legislation, cooperation with other departments and other ministries as well as for the co-operation with foreign countries. The same ministry also supervises the Office of Forest Management and Forest Geodesy which is responsible for management planning.

Forests which belong to the State Treasury (81.9% of all forests) are supervised directly by a state run organization called "Lasy Państwowe" (State Forests) in which we can distinguish the following three levels of supervision: 1. General Direction of State Forests; 2. Regional Direction of State Forests (17); and 3. Forest Districts (412). State Forests are run by the General Director with the aid of General Direction and Regional Directions of State Forests.

In the field of forestry, Poland realizes active co-operation with foreign countries and is a signatory of all major international contracts and agreements. For several years now the Central Statistical Office has been responsible for the development and dissemination of information connected with forestry in the form of a periodical entitled "Forestry". All major research projects

TABLE 4.2.2

Removals from Poland's forests, by forest ownership, 1990-1998

	1990	*1995*	*1998*
TOTAL (1,000 m^3)	18,676	22,492	24,917
Stemwood	17,617	20,651	23,107
Public forests	16,272	19,181	21,886
Owned by State Treasury	16,231	19,050	22,980
of which:			
Managed by State Forests	15,906	19,942	2,149
National parks	103	200	174
Owned by communes	41	131	127
Private forests [a]	1,345	1,470	1,221
Slash [b]	1,056	1,840	1,810
Stump wood [c]	3.3	0.7	0.1
Removals of stemwood per 100 ha of forest area in m^3	202.6	235.8	262.1
Public forests	225.4	264.1	299.6
of which:			
Managed by State Forests	233.7	273.4	310.8
Private forests [a]	91.2	98.4	80.9

[a] Until 1997, estimated data.

[b] Exclusively in public forests.

[c] A small volume of stumps is harvested.

Source: Central Statistical Office, 1999.

connected with forestry are carried out by the Research Institute of Forestry which cooperates with numerous foreign centres.

The most important legislative act regulating management of forest resources is the Forest Bill of 1991 together with the following amendments.

The Forest Bill comprises such legislative acts, enactments and regulations as:

- The Nature Protection Bill of 1991 (currently under amendment),
- The Bill on the Protection of Farm and Forest Land of 1995,
- State Forest Policy of 1997,
- Enactment No 30 on Forest Promotional Complexes of 1994,
- Enactment No 11 on Ecological Basis of Forest Management,
- National Programme for the Increase of Forest Cover, 1995,
- Spatial Planning Bill.

Furthermore, from 1990 to 1997 about 30 legislative regulations were published in the form of Ministerial Ordinances which are considered important for forest economy.

Generally speaking, non-privatized enterprises of wood, furniture and pulp and paper industries are supervised either by the Minister of Treasury or regional governors. Some sawmills are state owned now but they too should be privatized within 3 years. The Ministry of Privatization which was established at the beginning of 1990s was changed into the Ministry of Treasury which is the owner of all enterprises (including wood industry enterprises) which have not been privatized so far.

The structural and economic transformations taking place in Poland have led to changes in the approach to economic management and planning in industry. Newly developed programmes are of strategic character and are associated primarily with the development and utilization of the state budget as well as with the creation of marketplace mechanisms in relation to the above mentioned enterprises. Another important area of activity is privatization of state enterprises and development of the banking system.

The Ministry of Economy is responsible for the development of the economy. In the mid 1990s, bearing in mind the process of the integration of our country with the European Union, the Office of European Integration was established. Both forestry and wood industry have, in recent years, been intensively involved in preparations for the integration into the European Union.

For the past few years, organizations responsible for the transitional economy have been very active. They include: Agency for Industrial Development, State Foreign Investment Agency, Agency of Technique and Technology. Enterprises of the wood, furniture and pulp and paper industries have established new non-compulsory associations or producers' organizations which represent these companies and fulfil many other functions which are necessary for their proper operation.

The following associations and organizations have been established so far: Association of Wood-based Panels Producers, Polish Economical Chamber of Furniture Producers, The Polish Economic Chamber of Woodworking Industry, Association of Polish Papermakers, Polish Association of Eur-Pallets Producers.

The Institute of Wood Technology in Poznan, which has restructured to the conditions of market economy, carries out a wide range of activities for purposes of wood industry enterprises, while the Cellulose and Paper Institute in Łódz performs similar services for the pulp and paper industry.

4.4 Effects of the transition process

During the ten-year period of the implementation of the market economy in Poland, the foundations were laid to achieve economic targets. One of the major objectives was privatization of the economy.

Privatization processes in the wood sector are more advanced on average than in Polish industry. In 1999 more than 93% of production of the entire wood and furniture industries as well as 95% of the pulp and paper industry was manufactured in the private sector. Privatization in the whole Polish manufacturing industry is approximately 70%. The building woodwork, furniture and pulp and paper industries are the most privatized sectors.

It should be stressed that in Poland the importance of small and medium companies doing business in wood processing is much higher than on average in the entire Polish industry. In 1999, small enterprises (up to 50 persons) employed about 45% of workers in the wood industry. Of this over 35% were employed in furniture industry and 24% in the pulp and paper industry. However, in the entire Polish industry only about 23% of employment is in small enterprises. Small firms manufacture approximately 38% of the production value in wood industry, 35% in the furniture industry and 17% in the pulp and paper industry. The total proportion for the entire industry is 20%. As a rule, small wood processing companies are more efficient than big companies.

Systemic transformations resulted in a considerable strengthening of the forest-wood processing sector in

Poland as evidenced by the higher share of this sector both in the national income and in foreign trade balance.

The quality of many wood products manufactured in Poland is at world level quality, e.g. furniture and wood-based panels.

4.5 Integration into the EU

In comparison with other branches of the Polish economy, it can be said that the forest and forest industries sector as a whole is relatively well prepared for the process of integration with the EU member states. However, the situation varies depending on individual sectors and groups of enterprises of different sizes.

Generally speaking, a relatively higher degree of adjustment can be observed in large enterprises and the level of preparedness is believed to be worse in small- and medium-sized firms. On the other hand, when the problem is analysed from the point of view of various branches, the situation is better in such industries as wood-based panels, building woodwork, woodpulp and furniture. However, in sawmilling and paper manufacturing industries, it is relatively worse.

The major advantages of the Polish wood industry are: 1. high degree of advancement of privatization processes; 2. relatively high proportion of foreign investments; 3. high degree of self-sufficiency regarding the supply of wood raw material and wood materials; 4. considerable production potentials, i.e. excess capacity; 5. considerable adjustment of standards and regulations have been made to those currently in force in the EU member states. Additionally, the following elements also speak in favour of Poland: relatively low level of remuneration and energy prices in Poland, political stability and constantly improving economic stabilization expressed by a rising national income (albeit, somewhat weak last year).

The most serious obstacles in the adjustment of the wood industry to the requirements of the EU include: low labour efficiency; lower than the average level in the EU countries of modernization of production of certain wood products; considerable wear of production equipment; and limited possibilities of self-financing for further development.

At the moment of Poland's accession to the European Union, the majority of Polish entrepreneurs expect more opportunities than threats for the development of their firms.

4.6 Forest industry – production and consumption

The wood industry was among the first to overcome the crisis of the "transition period". This can be attributed primarily to dynamically developing furniture exports, and second to the restructuring of furniture enterprises, including on-going processes of ownership transformations.

After certain initial problems at the beginning of privatization, the current situation in Polish wood industry appears to have stabilized. In 1998 the proportion of wood, furniture and paper industries in gross national product amounted to 1.8%. Over 10 years, the share of wood industries in the total manufacturing (value of production) industry increased from 4.6% in 1989 to 8% in 1999.

Approximately 260,000 persons are employed in wood industries (data from 1999, in firms employing more than 5 persons) which constitutes 8.5% of all people employed in industry: about 119,000 persons are employed in the furniture industry, 32,000 in building woodwork industry, 35,000 in the sawmill industry, 14,000 in the wood-based panel industry and 39,000 in the pulp and paper industry.

The Polish wood industry is extremely dispersed, with the exception of wood-based panel and pulp industries. Out of over 60,000 firms, about 6,200 enterprises employ over 5 persons but only 860 companies engage more than 50 workers (this group includes nearly 390 furniture companies). In this current period of transformation, it was possible to observe processes of production concentration in some sectors of wood industry. This was especially true in the case of particle board and furniture production and this trend was similar to that observed in western Europe.

The economic crisis and the shock accompanying the initial phase of transformations were so severe that only some of the industries using wood as raw material were able to achieve the level of production of the late 1980s (table 4.6.1). This refers, in particular, to sawnwood, especially pine (graph 4.6.1). On the other hand, a favourable economic trend can be observed in the case of wood-based panels (graph 4.6.2) and paper (graph 4.6.3).

In the last decade, the wood industry was one of the industrial sectors which was characterized by the highest rate of production growth. However, in the last two years this rapid rate of production growth has slowed down: this slowdown was particularly noticeable in the sawmill and wood-based panel industries (table 4.6.2). The causes of this slump include:

- the collapse of the eastern market in mid 1998 which reduced export possibilities (especially of Polish furniture);
- economic stagnation observed in some western countries which are crucial markets for Polish wood products;
- persistent crisis on the housing market; and

- lack of revival in the internal demand resulting from the pauperization of large sections of the population.

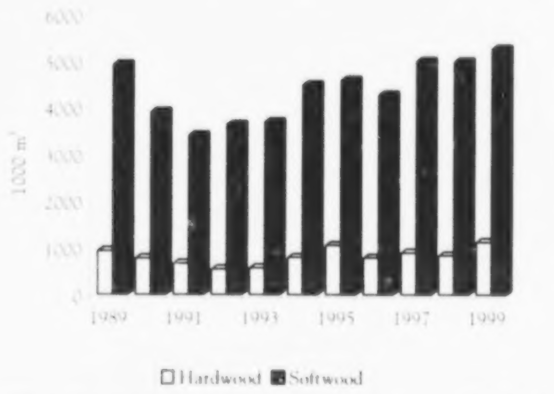
No significant changes in the possibilities of development of Polish wood industries are predicted in 2000.

Tendencies similar to those observed in the production sectors can be noticed in wood products consumption. Currently, the use of sawnwood is 9% lower than in 1989 because of the downturn in the construction industry and the decrease of furniture production. The consumption of plywood was down by 16%. On the other hand, consumption of particle board is almost twice as high as ten years ago, fibreboard 24% higher, paper and paparboard, up by 53% and furniture up by 40% (table 4.6.3).

Per capita consumption of wood products in Poland is much lower than in the EU countries. When we compare the level of wood consumption in Poland with that in the EU member states in 1998, it is evident that it was about 70% in the case of sawnwood, 93% for particle boards, 56% for MDF boards, 23% for fibrous pulps and 30% for paper and paparboard. The only exception is the fibreboard sector where the consumption in Poland is over twice that of western European countries (presumably because of consumption of fibreboard by the furniture industry, which is export-oriented). When expressed as wood equivalents, then the per capita utilization of all wood-based products in Poland in 1998 amounted to 0.42 m^3(r).

GRAPH 4.6.1

Sawnwood production in Poland, 1989-1999

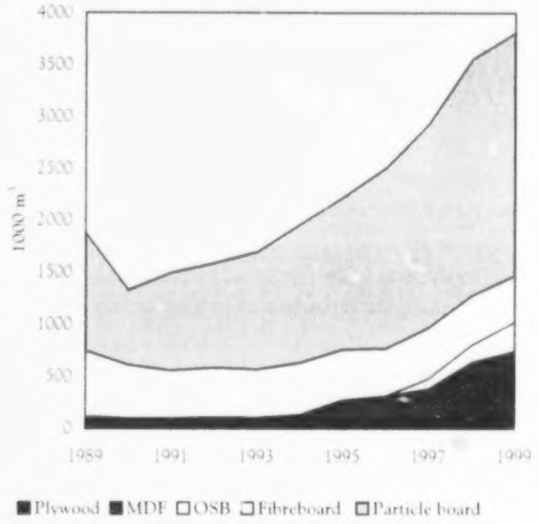


Note: For 1999, estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

GRAPH 4.6.2

Wood-based panels production in Poland, 1989-1999



Note: For 1999, estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

TABLE 4.6.1

Wood products production, 1989, 1998, 1999

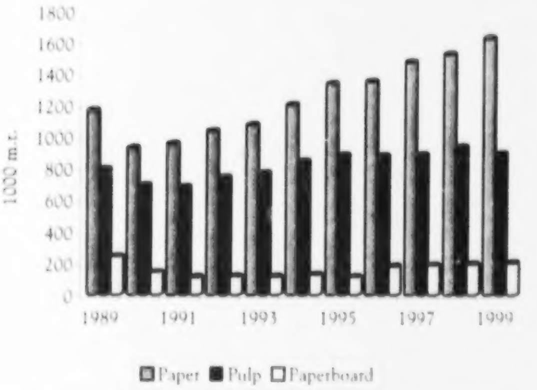
	Unit	*1989*	*1998*	*1999*[a]	*% change 1989-1999*
Sawnwood	1,000 m^3	5,860	5,830	5,650	-3.6
Particle board	1,000 m^3	1,132	2,452	2,620	+131.4
Fibreboard	1,000 m^3	635	975	1,060	+66.9
Plywood	1,000 m^3	112	134	129	+15.2
Pulp	1,000 m.t.	791	934	891	+12.6
Paper	1,000 m.t.	1,405	1,718	1,830	+30.2
Furniture	million $	882	2,594	2,500	+183.0

[a] Estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

GRAPH 4.6.3

Pulp, paper and paperboard production in Poland, 1989-1999



Note: For 1999, estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

4.7 Trade of wood and wood products

The development potential of Polish wood industry has always been and still is directly related to export possibilities. For several years now 70 to 80% of the furniture production has been exported. 15% of sawnwood, 22% of flooring, 22% of particle board, and over 40% of fibreboard are exported. On the other hand, imports play a significant role only in the case of fibrous pulp (29% imported), and paper and paper products (56% imported). Imports as a per cent of domestic production are 14% for furniture, 5% for sawnwood, 7% for particle board and 12% for fibreboard.

In 1989 Poland exported wood products (including furniture and products of pulp and paper industry) worth approximately $395 million, while in 1999 the value of these exports reached $3.7 billion, almost 10 times higher (not adjusted for inflation). The rate of growth of exports of wood products, especially furniture, in the entire 10-year period was greater than the rate of growth for all Polish exports. The year 1998 was exceptional when, in the wake of the crisis in Russia, the growth rate of furniture exports clearly declined.

TABLE 4.6.2

Production of forest industry in Poland, 1991-1999

(Annual % change based on constant prices)

	1991	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*
All manufacturing	-8.0	2.9	96.4	13.1	10.2	8.8	11.2	4.8	4.4
Woodworking industry	-2.6	15.4	3.7	11.7	19.4	3.0	18.1	11.6	15.5
Pulp and paper industry	-3.9	12.0	6.6	26.7	17.7	12.0	16.6	9.1	14.7
Furniture industry	1.3	13.4	12.2	19.9	21.7	23.0	24.3	16.1	8.5 [a]

[a] Estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

TABLE 4.6.3

Wood products consumption in Poland, 1989, 1998, and 1999

	Unit	*1989*	*1998*	*1999* [a]	*% change 1989-1999*
Sawnwood	1,000 m^3	5,590	5,211	5,065	-9.4
Particle board	1,000 m^3	1,168	2,588	2,220	+90.1
Fibreboard	1,000 m^3	589	692	730	+23.9
Plywood	1,000 m^3	140	117	118	-15.7
Pulp	1,000 m.t.	963	1,043	1,110	+15.3
Paper	1,000 m.t.	1,463	2,088	2,240	+53.1
Furniture	million $	750	1,081	1,050	+40.0

[a] Estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

The opening up of borders in 1995 as well as considerable liberalization of foreign trade of wood and wood products stimulated trade. In 1999 Poland exported over twice as much sawnwood, 8 times more particle board, 9 times more paper and paperboard and 12 times more furniture than in 1989 (table 4.7.1).

The main market outlets for Polish products in this period were western European countries. At present, the majority of the trade takes place with the EU member states. In 1999 about 75% of wood products and pulp and paper products as well as over 80% of furniture were sold to the EU countries. At the same time, the EU is an important supplier to the Polish marketplace. Approximately 58% of wood products, 85% of furniture, 48% of pulp, 88% of paper and 81% of paper products come from the EU. Germany is by far the most important trade partner.

In 1999 about 60% of softwood sawnwood experted, 40% of plywood , over 50% of flooring material, 38% of particle boards, 34% of MDF and 58% of furniture were exported to German markets. At the same time, Germany's share of Poland's imports were particle board, including OSB 6%, fibreboard 67%, MDF over 81%, furniture 30%, and paper and paparboard 30%.

4.7.1 *Pulpwood and sawlogs*

Practically speaking all industrial roundwood removals are processed by domestic wood processing plants. According to initial data, the export of industrial wood in 1999 amounted to 395 thousand m^3, i.e. 2% in relation to total removals (graph 4.7.1). On the other hand, Poland imported 570,000 m3 of industrial roundwood, which constitutes slightly more than 2% of production. This trend has remained unchanged for a long time.

Poland exports industrial wood primarily to Austria (32% in 1999) and the Czech Republic (25%) as well as to Denmark (9%), Germany (8%), Italy (8%) and Sweden (7%). The main suppliers of wood raw material to Poland are: Belarus (36%), Lithuania (26%), Ukraine (14%), Germany (12%) and Russia (8%).

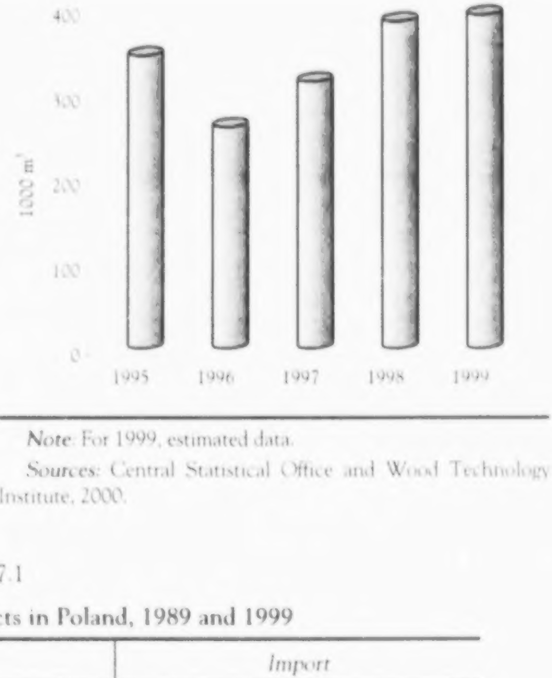
Half of the industrial roundwood exported is sawlogs and 30% is pulpwood. In the case of imports, the proportions are reversed with 68% being pulpwood and only 17% sawlogs.

The last two years witnessed a significant (47%) increase in pulpwood imports resulting from development of the Polish pulp and paper industry and new investments in MDF and OSB production which use this type of wood raw material.

In official statistics MDF is included in fibreboard and OSB is included in particle board, however, their individual importance is growing (tables 4.7.2 and 4.7.3).

GRAPH 4.7.1

Export of industrial roundwood in Poland, 1995-1999



Note: For 1999, estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

TABLE 4.7.1

Exports and imports of wood products in Poland, 1989 and 1999

Products	*Unit*	*Export*			*Import*		
		1989	*1999* ᵃ	*% change 1989-1999*	*1989*	*1999* ᵃ	*% change 1989-1999*
Sawnwood	1,000 m^3	386	840	+117.6	119	255	+114.3
Particle board	1,000 m^3	69	580	+740.6	105	180	+71.4
Fibreboard	1,000 m^3	122	455	+273.0	76	125	+64.5
Plywood	1,000 m^3	25	81	+224.0	53	70	+32.1
Pulp	1,000 m.t.	15	41	+173.3	187	260	+39.0
Paper	1,000 m.t.	168	610	+263.1	110	1020	+827.3
Furniture	million $	148	1,850	+1,150.0	29	360	+1,141.0

ᵃ Estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

Bearing in mind the predicted further increase of the domestic demand for paper, MDF and OSB, it is expected that in 2000 the trend for growing imports of pulpwood will continue, although expressed in absolute figures the quantities will not be very high (approximately 265,000 m^3).

4.7.2 Sawnwood

It is estimated that in 1999 Poland exported 840,000 m^3 sawnwood, which was 2% more than in 1998. More than 70% of exports comprise sawn softwood, primarily pine. In 1999 more than 62% of softwood exports and 23% of sawn hardwood was sold on the German market and this situation has remained unchanged for several years now. Other softwood customers include the Netherlands, Denmark and Italy (table 4.7.4). Sawn hardwood is sold also to Italy, Sweden, Denmark and Austria (table 4.7.5). It is forecast that in 2000 the export of sawnwood will reach approximately 1,100,000 m^3.

Imports reached the volume of 255,000 m^3 in 1999, and in comparison with 1998, were 23% higher. Sawnwood is imported by Poland primarily from countries of eastern Europe. In 1999, 46% of sawn softwood came to Poland from Russia (up from 35% in 1998) and 24% from Belarus (up 17% from 1998) (table 4.7.6). Sawn hardwood is imported to Poland mainly from Slovakia and Germany. (table 4.7.7). Imports are expected to increase to the level of 350,000 m^3 in 2000.

TABLE 4.7.2

MDF consumption, production and trade in Poland, 1994-1998

(1,000 m^3)

	Consumption	*Production*	*Exports*	*Imports*
1994	13	15	9	7
1995	63	168	115	10
1996	137	196	100	41
1997	191	246	104	49
1998	348	500	212	60

Source: Wood Technology Institute, 2000.

TABLE 4.7.3

OSB consumption, production and trade in Poland, 1994-1998

(1,000 m^3)

	Consumption	*Production*	*Exports*	*Imports*
1996	22	0	0	22
1997	140	100	39	79
1998	50	170	170	50

Source: Wood Technology Institute, 2000.

TABLE 4.7.4

Sawn softwood exports from Poland, 1999

	Volume (m^3)	*Share (%)*
Germany	341,000	62
Netherlands	49,500	9
Denmark	38,500	7
Italy	38,500	7
Belgium	33,000	6
Other	49,500	9
Total	550,000	100

Source: Wood Technology Institute, 2000.

TABLE 4.7.5

Sawn hardwood exports from Poland, 1999

	Volume (m^3)	*Share (%)*
Italy	92,800	32
Germany	66,700	23
Sweden	20,300	7
Denmark	20,300	7
Austria	20,300	7
Other	69,600	24
Total	290,000	100

Source: Wood Technology Institute, 2000.

TABLE 4.7.6

Sawn softwood imports by Poland, 1999

Source	*Volume (m^3)*	*Share (%)*
Russia	66,700	46
Belarus	34,800	24
Ukraine	11,600	8
Czech Republic	8,700	6
Other	23,200	16
Total	145,000	100

Source: Wood Technology Institute, 2000.

TABLE 4.7.7

Sawn hardwood imports by Poland, 1999

Source	*Volume (m^3)*	*Share (%)*
Slovakia	25,300	23
Germany	23,100	21
Ukraine	14,300	13
Latvia	12,100	11
Belarus	7,700	7
Other	27,500	25
Total	110,000	100

Source: Wood Technology Institute, 2000.

4.7.3 Wood-based panels

Between 1989 and 1999 the export of wood-based panels increased more than five times. In this period, Poland began to produce new kinds of boards, i.e. MDF in 1994 and OSB in 1997, which became quite attractive products to export markets (graph 4.7.2). For example, in 1998 one fourth of the export (216,000 m^3) was MDF. In the same period of time the import of wood-based panels increased by 1.6 times.

The majority of these imports included particle board which was necessary for the dynamically developing furniture industry. In comparison with 1998, exports of wood-based panels increased by 29% in 1999, while imports dropped by nearly a half.

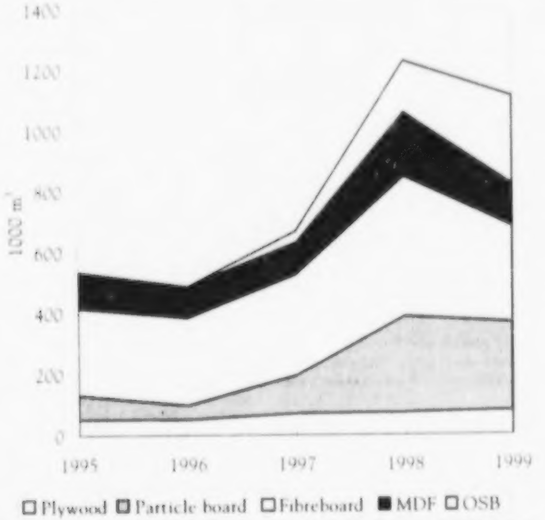
More than 50% of wood-based panels exported from Poland are particle board, including a growing share of OSB.

According to initial data, in 1999 Poland exported 580,000 m3 of particle board (84% more than in 1998), 455,000 m3 fibreboard (the same level as in 1998) and 31,000 m3 of plywood (13% less than in 1998).

Approximately 38% of particle board export is to Germany, 8% to Denmark, 8% to Ukraine, and 6% to Lithuania. The main customers for Polish fibreboard are: Germany 45%, Holland 9%, the Czech Republic 8% and Great Britain 8%. Plywood is exported mainly to Germany 41%, Sweden 13%, and Denmark 10%.

GRAPH 4.7.2

Export of wood-based panels in Poland, 1995-1999



Note: For 1999, estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

Poland imports wood-based panels primarily from Germany and countries of eastern Europe. In the case of particle board, about 31% is imported from Germany, 27% from Lithuania and 12% from Estonia. For fibreboard, 68% is purchased from Germany and 9% from Belarus. 39% of plywood comes from Russia and 29% from Belarus.

It is expected that in 2000 the export of particle board will increase to 650,000 m3. The export of fibreboard will fluctuate in the range of 460,000 m3, while plywood exports, following increase of domestic demand, will decrease to 83,000 m^3.

4.7.4 Woodpulp and paper

Mean paper and paperboard consumption in Poland is relatively low and amounts to about 55 kilograms per person per year.

In contrast to all wood products there has been, for many years now, a trade deficit in Polish foreign woodpulp and paper trade. In 1999, this surplus was over six times higher in the case of woodpulp and 1.7 times higher – in the case of paper and paperboard. According to initial data, the export of woodpulp in 1999 amounted to 41 thousand tonnes and was 2.7 times higher than in 1989 but 45% lower than in 1998. Paper exports in 1999 reached 610 thousand tonnes and was by 3.6 times higher than ten years ago and by 10% more than in 1998.

Nearly 90% of Polish woodpulp exports are to Germany. Paper and paparboard exports are to Germany, 22%; Italy, 16%; France and Great Britain, 7% each.

Imports of woodpulp in 1999 reached about 260,000 tonnes, 42% more than the previous year. In the period from 1989-1999 imports of paper and paparboard increased by over 9 times to the level of 1.0 million tonnes. Poland exports mainly packaging paper and imports high quality paper and special types of papers.

The main suppliers of woodpulp to the Polish market are: Russia (33%), Finland (19%), Sweden (18%), the United States (14%). Paper is imported from Germany (30%), Finland (21%), Austria and Sweden (10% each).

4.8 Certified forest products

Polish forests were one of the first in Europe to initiate the implementation of international certificates confirming the compliance of management practices with environment protection regulations. The certificates guarantee the conformity of raw materials and processed products with stated origin, hence they should, in theory at least, create a market for certified wood. So far, six out of the existing seventeen Regional Directions of State Forests were awarded certificates within the framework of the Forest Stewardship Council (FSC) certification scheme. Moreover, three wood processing plants were awarded "chain of custody" certificates. This certificate confirms that a given product was obtained from wood harvested in certified forests in compliance with Forest Stewardship Council regulations.

On the basis of available information there is no ground to claim that there is a market of certified wood in Poland. Since 1998 General Direction of State Forests has stopped monitoring the process of certification of domestic customers of wood from certified forests ("chain of custody" certificate), which is why no information is available on the demand for certified wood on domestic market. There are no special prices for certified wood in the system of prices offered by the State Forests. It can, therefore, be said that if there is a market in Poland for certified wood, then it is still a "dormant market".

4.9 Prospects for wood industry

In the wake of the systemic transformations in Polish economy in the years between 1990 and 2000, the importance of the wood industry has increased remarkably as evidenced by the increase in the share of this sector of industry in national income, value of total production sales and a considerable and steadily growing positive foreign trade balance.

Transformations of the Polish wood sector moved faster than in the other branches of Polish economy. However, considerable differences occurred in the process of changes both in individual sectors and in groups of enterprises of this industry. Despite periodic difficulties occurring not only in the demand but also in production, future prospects for the development of the Polish wood industry could be assessed as very promising.

It can be expected that the driving force for development will remain furniture export, however the growth rate will slow. It appears that paper conversion, e.g. box manufacturing and other conversions, is a sector with bright perspectives.

The important factors which will influence further development of the forest and wood industry sector in Poland are the rich domestic raw materials and the low energy prices and labour costs. It can be expected that the above advantages of Polish industry will be further fortified by creating an appropriate business environment to encourage both production and export. This kind of positive economic climate could include:

- stabilization of Polish economy and further improvement in the majority of macro-economic indices;
- development of the housing sector;
- further improvement of demand in the domestic marketplace;
- development of the huge eastern market potential; and
- such popular factors as "return to nature" and construction with ecological materials, especially wood.

Because the Polish society aspires to increase consumption, it can be assumed that the current low level of consumption of basic wood products in comparison with mean European standards will favour an increase of demand for wood products. This, in turn, will promote further development of wood industry. However, per capita national income in Poland, which is several times lower than in western European countries, will prevent the rapid achievement of the consumption level of wood product similar to that of western European countries. All in all, considering the predicted population growth, it can be assumed that Poland may be able to reach per capita consumption indices for most wood products similar to the current ones in western Europe towards the end of the next decade.

Chapter 5

China's Forest Products Markets [1]

Highlights

- China's domestic demand for wood products is growing rapidly due to the rising standard of living of its 1.3 billion people.
- Because of extreme lack of forest resources and strong demand, China now ranks as the world's third-largest importer of forest products, importing nearly one-third of its forest products consumption.
- After the economic reform and opening to the outside world, the production and trade of major forest products has increased considerably and has accelerated with foreign investment.
- For natural forest protection programme, the annual production of roundwood will be halved between 1998 and 2000, and be further reduced by 2003. The shortfall in domestic harvest volume is being replaced by imports.
- Although 5 million hectares are planted per year, the forest land cover is only 17%. A structural shortage is forecast in 2010 when China is expected to import 50% of its forest products demand, of which almost 70% will be from temperate and boreal sources.
- Sawnwood consumption and production rank third in the world.
- Although per capita consumption is less than half the world average, China's production and consumption of paper and paperboard is second only to that of the United States.
- Since 1998, by value, forest products have been the greatest commodity imported by China.
- Sources of softwood log imports have changed from North America to Russia and New Zealand. Hardwood logs still come from the United States, Russia and increasingly from Europe, especially in 2000 following the European windstorm volumes.
- Furniture exports, of which 50% were wooden, more than doubled in value from 1997 to 1999, reaching $2.7 billion. The major destination was the United States.
- Wood-based panels production increased 42% in 1999 from 1998 and plywood imports decreased as a result, by 38% in volume.

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- Paper manufacturing is increasing substantially. Imports of pulp and waste paper rose and paper imports decreased by 23% in 1999.
- A growing volume (5 million m^3 in 1999) of roundwood, both domestic and imported, is used for cultivation of edible fungi.

Secretariat introduction

The secretariat would like to thank the co-authors of this special chapter, Drs. Kunshan Shi and Fengming Lin and Mr. Zhisheng Xuof the Chinese Academy of Forestry in Beijing. Dr. Shi is a Forestry Information Researcher and Director of the Research Institute of Scientific and Technological Information on Forestry and just completed an outlook study on China's forest products markets in 2010 for the ITTO (some preliminary results are presented here). Dr. Lin is a Forest Industry Researcher and Vice Director of the Tropical Forest Product Information and Consultation Center of China. Mr. Xu is an assistant to Dr. Shi and he performed the translation of the text.

The Chinese Academy of Forestry, founded in 1958, is a comprehensive research institution affiliated with the State Forestry Administration. The Academy has 9 research institutes, 4 experimental centres and 3 research and development centres, which are located in 10 provinces. Research interests cover all forestry-related subjects, mechanical and chemical processing of forest products, utilization of forest products, application of new and advanced technologies, biotechnology, remote sensing, geographical information systems, global positioning systems, system engineering and information networks. Over 1,700 academic and technical staff were working at the academy at the beginning of 1998 (Source: http://www.forestry.ac.cn/yjg/yjg.htm)

The secretariat found this information on a fast-emerging forest products consuming nation to be quite enlightening. This chapter is one of a continuing series of special chapters in the Review which features a country's forest products markets, either a trading partner or competitor, from outside the ECE region.

5.1 General socio-economic development

5.1.1 *Population and employment*

By the end of 1999 the total population of China was 1.3 billion, of which 30.9% was living in cities and towns. Annual natural growth is 0.9%. The total number of employed is 705.9 million, of which 10.1 million work in cities and towns. The registered unemployment rate is 3.1%.

5.1.2 *Gross domestic product and people's income*

The GDP in 1999 was nearly $1,000 billion, up 7.1% over the previous year. The per capita disposable income of the country's urban families in 1999 was 5854 yuan ($708), 9.3% higher than the previous year.

The price of goods has decreased in successive years because market demand is insufficient. In 1999, consumer prices decreased by 1.4%, and the total level of retail prices for goods decreased by 3%.

5.1.3 *Exchange rate of the yuan and foreign exchange reserves*

The exchange rate of the yuan remains stable. In 1999, the exchange rate of the yuan to the United States dollar was 8.2793:1, as compared to 8.2794:1 in 1998. Foreign exchange reserves increased steadily reaching $154.7 billion at the end of 1999, compared with $145.0 billion in 1998 and $139.9 billion in 1997.

5.1.4 *International trade*

The total value of trade (import and export) in 1999 was $360.7 billion, up 11.3% over the last year. Of this, the export value was $194.9 billion, the favourable balance of trade was $29.1 billion. The import of forest products in terms of value was $8.0 billion, ranking first place of all commodities.

5.1.5 *Influence of the Asian financial crisis on China's economy*

The Asian financial crisis of 1997 and 1998 had an enormous influence on China's economy, especially on exports. In this crisis, while the currencies of some Asian countries depreciated considerably, China made efforts to maintain the stability of the exchange rate of the yuan. Therefore, China's export commodity prices lacked competitiveness, causing China's export value to drop by 12.9% to Asian nations, (by 4.3% to Japan and 30.2% to Korea) during the first half of 1998, compared with the same period of the previous year. The rate of growth of Chinese exports slid drastically. Total exports increased by only 0.5% over the previous year, and growth rate dropped by 20.4 percentage points compared with the previous year.

5.1.6 *The role of forestry in national economy*

The total production value of forestry in the state-owned institutions in 1998 amounted to around $33.3 billion, representing about 2% of gross national product in China. Total employees in state-owned forestry institutions in 1998 were around 2.3 million. If non State-owned institutions, which are significant, were included, the percentage would be greater.

5.2 Forest resources

5.2.1 *Forest area*

According to the Fifth National Forest Inventory (1994-1998), published in 2000, the total forest area of China[2] accounts for 153.6 million hectares, covering 16.5% of the land area. Per capita forest area is only 0.12ha. Of the total forest area, forest stand amounts to 134.3 million hectares, making up 87.4%; exploitable forest, 20.22 million hectares, representing 13.1%; bamboo forest, 4.21 million hectares, accounting for 2.9%. Of the forest stand area, 50.7% is softwood forest, while hardwood forest accounts for 49.3%.

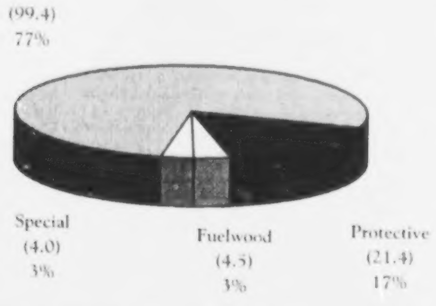
5.2.2 *Growing stock*

The total growing stock is 11.3 billion m³, of which 10.1 billion m³ or 89.2% are forest growing stock, while the balance is the growing stock of open woodland (1.2%), single trees (6.2%) and plantations (3.4%) (graphs 5.2.1 and 5.2.2).

GRAPH 5.2.1

Forest categories in China, 1999

(Million ha)

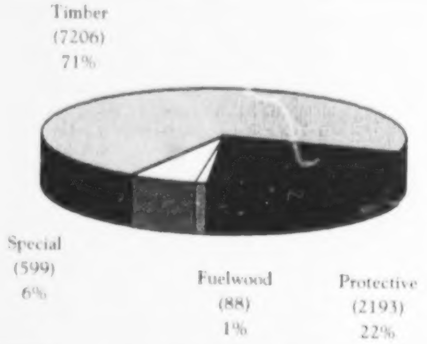


Source: China Forestry Statistical Yearbook, 1999.

GRAPH 5.2.2

Forest growing stock in China by forest categories, 1999

(Million m³)



Source: China Forestry Yearbook, 1999.

5.2.3 *Forest category*

Forest is usually divided into four categories according to its use: commercial timber forest, protective forest, fuelwood forest and special-purpose forest. The commercial timber forests are sources of industrial roundwood and non-wood forest products. Protective forests guard against floods and may be reserved for other purposes. Special-purpose forests are reserves for scientific research and environmental protection.

5.2.4 *Forest ownership*

42% of the total forest area is owned by the State, while 58% is owned collectively. As far as growing stock is concerned, the percentage is 75% and 25% respectively.

5.2.5 *Increment and consumption of the forest resources*

The annual net increment of the forest is 457.5 million cubic meters with a net rate of growth of 3.8%; the annual average net consumption is 370.7 million cubic meters with a net rate of consumption of 3.1%.

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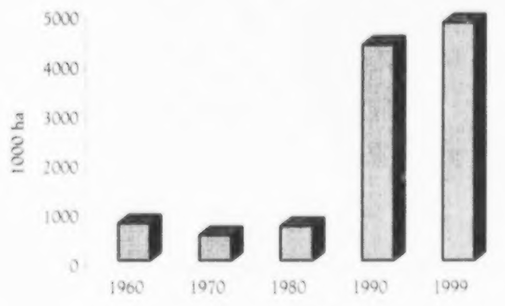
[2] Throughout this chapter, statistics do not cover Taiwan Province of China.

5.2.6 *Plantations*

By the end of 1999, the total area of plantations in China amounted to about 46.6 million hectares, covering 30.4% of the total forest area. However, the growing stock of plantations is only 1.0 billion cubic meters, accounting for less than 10% of the total growing stock. In the last five years, the average annual planting area fell to 4.8 million hectares. Most of the plantations are in the stage of young and middle-aged stands.

GRAPH 5.2.3

Annual planting areas in China, 1960-1999



Source: China Forestry Statistical Yearbook, 1999.

5.2.7 *Nature reserves and forest parks*

As of the end of 1998, the number of nature reserves of China totaled 1,146, with an area of 88.1 million hectares, covering 8.8% of the State's total area. Of all the nature reserves, 137 are classified as national level. There are now 870 forest parks of various levels, with a total area of 7.5 million hectares, representing 0.8% of the total territory of which 292 are national forest parks, with an area of 5.3 million hectares.

5.3 Institutional framework

5.3.1 *Organizational structure of forestry management*

China's forestry institutions are set up at five levels:

- the State Forestry Administration (former Ministry of Forestry) in the central government;
- forestry departments at the provincial level;
- forestry bureaux at the regional level;
- forestry bureaux at the county level; and
- forestry stations at the township level.

5.3.2 *Forest regulations and policies*

The Forest Law of the People's Republic of China, formally promulgated in 1984, is the most important law governing almost every aspect of forestry. With the approval of the State Council the former Ministry of Forestry promulgated the regulations for implementing the Forest Law of the People's Republic of China in 1986. Among other important forestry related laws and regulations are: Law of Water and Soil Conservation of the People's Republic of China; Regulations on the Protection of Terrestrial Wildlife; Provisional Regulations on Forest Management; Urban Greening Regulations; Regulations of the PRC on Nature Reserves; Regulations on Forest Park Management; and the Forestry Action Plan for China's Agenda 21.

In 1981, the Fourth Session of the Fifth National People's Congress adopted the Resolution on National Compulsory Tree Planting Campaign which states that "wherever possible, every Chinese citizen, 11 years old and over, excluding the old, weak, sick and disabled, should plant 3 to 5 trees per year in light of the specific local conditions, or accomplish an equivalent amount of work in seedling production, forest management and protection and other greening activities." By the end of 1998, 30 billion trees had been planted by 6 billion man-hours during the campaign.

Announced in June 2000, a National Plan of Ecological Environmental Construction issued by the State Council and the Tenth Five-year Plan (2001-2005) has set targets for afforestation. China plans to plant 11.5 million hectares of trees by 2005, 23 million hectares by 2010, and 46 million hectares by 2030 to bring the forest coverage to 18.2%, 19.4%, and 24%, respectively.

5.3.3 *Natural forest protection*

To reverse the deterioration of environment in some key areas, such as headwaters of the Yangzi River, Songhuajiang River and Nenjiang River, the Chinese Government decided to put in place the natural forest protection programme in 1998. According to this programme, the annual production of roundwood will be reduced by 12.4 million m^3 or 46% from the year 1998 to 2000 and be further reduced by 3.6 million m^3 in the second phase by the year 2003.

5.4 Analysis and development of production of China's major forest products, 1981 to 1999

After the reform and opening to the outside world, along with rapid and continuous development of national economy, the production of major forest products, including roundwood, sawnwood, panels, pulp, paper and paperboard and furniture, increased considerably. Because of changes in domestic forest resources and market demands, however, the increasing rates of production were significantly different among forest products.

Changes of production of different products over the period from 1981 to 1999 are described below.

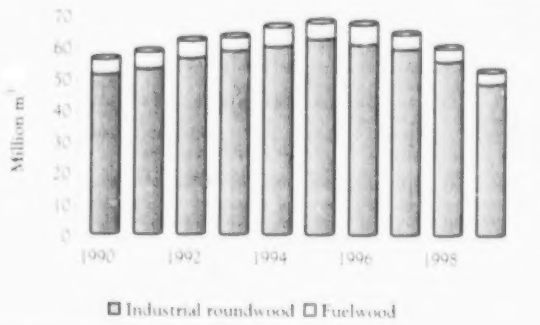
5.4.1 *Changes in roundwood production*

Roundwood production has been continuously declining (graph 5.4.1). The reason for this situation is that the Chinese Government has implemented the Natural Forest Protection Policy in the whole nation and greatly reduced roundwood production.

According to statistics provided by the State Forestry Administration, the total roundwood production in China was 52.3 million m^3 in 1999, 6% higher than in 1981 but 12% less than in 1998. Of the total, the production of industrial roundwood was 48.5 million m^3, 14.1% higher than in 1981 and 12.7% less than in 1998. The production of fuelwood was 3.9 million m^3, 43.9% less and 5.1% higher than in 1981 and 1998 respectively.

GRAPH 5.4.1

Roundwood production in China, 1990-1999



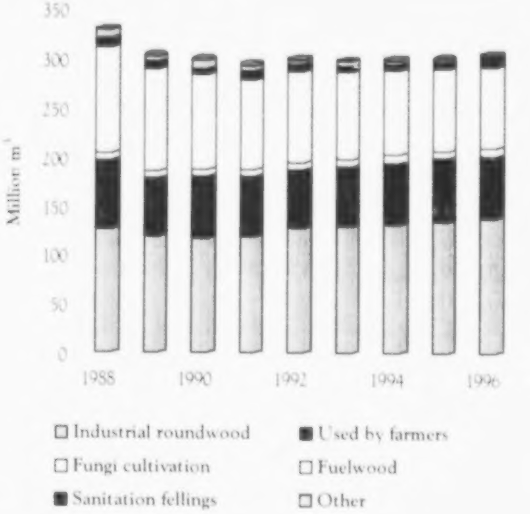
Source: The State Forestry Administration of China, 2000.

Since the official figures of roundwood production in China can not fully reflect the actual situation, experts generally adopted the "method of reverse reckoning" to estimate roundwood production. This method estimates the roundwood production based on the actual consumption of forest resources.

China's consumption statistics of forest resources come mainly from two kinds of surveys of national forest resources. The first is the "Survey of Consumption Volume and Consumption Structure of China's Forest Resources" normally produced each year by Resources Department of the former Ministry of Forestry, which ceased during the last two years. The second survey is the national forest inventory performed every 5 years by the Institute of Forestry Planning and Design under the State Forestry Administration. According to the survey of consumption volume and consumption structure of forest resources, the production of commercial roundwood in 1996 should be 83.9 million m^3. This is based on the conversion rate of 61% between the production of commercial roundwood and its consumption of forest standing volume. The total production of industrial roundwood would be much higher, about 129.3 million m^3, if the roundwood used by farmers and the cultivation[1] sector were included (graph 5.4.2). Substantial volumes of roundwood were lost in sanitation cuttings following floods and fires.

GRAPH 5.4.2

Roundwood utilization in China, 1988-1996



Source: Survey of consumption volume and consumption structure of China's forest resources, 1997.

New statistics indicate that the data of the first survey method are generally lower than the data of the second survey method (forest inventory, implemented every 5 years). It is estimated by experts concerned that the data of the first survey method accounts for only some 86% of the second survey method. According to the national forest resources inventory (1994-1999) completed in 2000, China's average annual net increment of forest trees accounts for 457.5 million m^3. The net consumption of the country's forests was 370.7 million, increased by 50.8 million m^3, compared with the previous inventory stage.

If the consumption of trees around houses, villages, road sides and water courses and canals, and sanitation fellings is not taken into account, the annual national average net consumption of forest resources under the scope of cutting quota management would be some 344 million m^3. This means that the annual national average production of roundwood in 1994-1998 period accounts to some 250 million m^3. When 30% of fuelwood consumption (about 75 million m^3) is subtracted, the production of industrial roundwood is about 175 million m^3.

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[1] Large volumes of roundwood are used in the cultivation of edible fungi, both as a substrate and also to build necessary structures.

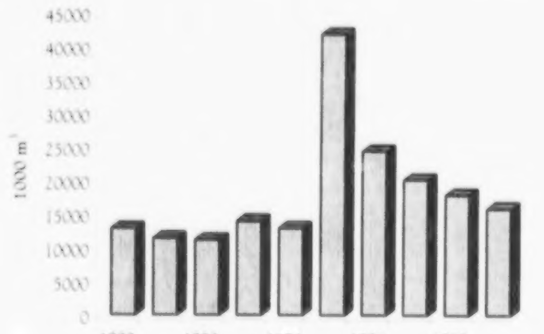
5.4.2 *Production of China's major forest products*

5.4.2.1 Sawnwood

According to the preliminary statistics by the State Administration of China, the production of sawnwood was 15.9 million m^3 [4] in 1999, 21.9% higher than in 1981 and 11.3% less than in the preceding year.

GRAPH 5.4.3

Sawnwood production in China, 1990-1999



Note: 1995 figures were from the third national industrial census, and the statistical scope was incomplete in preceding years; 1998 statistics do not include the production of non-state owned firms with annual production under 5 million Yuan.

Source: China's State Administration of Forestry, 2000.

5.4.2.2 Panels

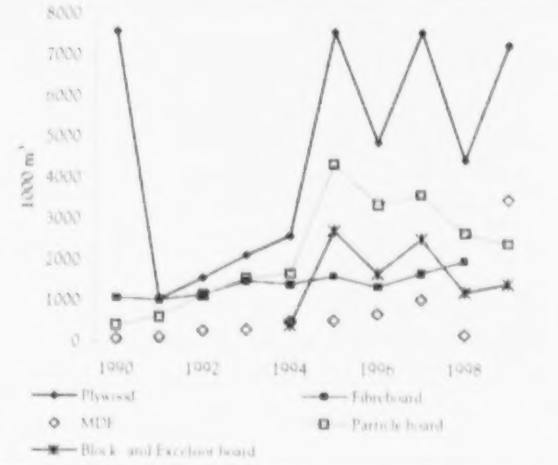
The production of wood-based panels was 15.0 million m^3, 14 times higher than in 1981 and 42.3% higher than in the preceding year (graph 5.4.4). The production of plywood was 7.3 million m^3, 20 times higher than in 1981 and 63% higher than in the preceding year. The production of fibreboard was 3.9 million m^3, 6.8 times higher than in 1981 and 77.9% higher than in the preceding year. The production of particle board was 2.4 million m^3, 31 times higher than in 1981 and 9.4% lower than in the preceding year.

5.4.2.3 Pulp

According to statistics by the State Administration of Light Industry, the production of pulp was 17.2 million m.t. in 1999, 4.2 times higher than in 1981 and 4.3% higher than in the preceding year.

GRAPH 5.4.4

Wood-based panels production in China, 1990-1999



Note: 1995 figures were from the third national industrial census, and the statistical scope was incomplete in preceding years; 1998 statistics do not include the production of non-state owned firms with annual production under 5 million Yuan.

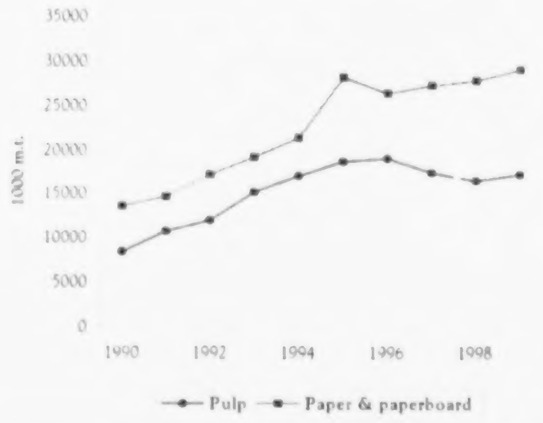
Source: China's State Administration of Forestry, 2000.

5.4.2.4 Paper and paperboard.

The production of paper and paperboard was 29

GRAPH 5.4.5

Production of pulp, paper and paperboard in China, 1990-1999



Note: 90% of pulp is made of straw; 1998 statistics do not include the production of non-state owned firms with annual production under 5 million Yuan.

Source: China's State Administration of Forestry, 2000.

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[4] Note: the production data of all forest products in 1999 are preliminary estimates.

million m.t., 5.4 times higher than in 1981 and 4.3% higher than in the preceding year (graph 5.4.5).

5.4.2.5 Furniture

The value of furniture production reached $10.5 billion in China in 1998, an increase of 12% over 1997, and further increased to $12.1 billion in 1999, with an increase of 14.9% over 1998 (table 5.4.1).

In the statistics of table 5.4.1, the production of all forest products was substantially higher in 1995 than in the preceding years. However, the production in 1998 was significantly lower than in the preceding year. This does not reflect actual changes of production, but rather these aberrations are due to changes of statistical procedures. Production in 1995 was substantially higher than in the preceding year chiefly because of an incomplete statistical scope in the preceding years. Production in 1998 and 1999 was lower than in the preceding year because of a reduction in the statistical scope, namely because statistics of 1998 and 1999 did not include the production of non-State-owned firms with annual production value under 5 million yuan.

Based on the analysis of continuous growth of China's national economy in recent years and the improvement of standard of living, the production of China's major forest products, except for sawnwood, should be higher than the statistical data for 1997. According to investigations, inadequate statistical systems and large numbers of private enterprises which made false reports on production to avoid taxes were also important factors which damaged the accuracy of statistical data.

Limited by statistical systems and methods, sawnwood production data for past years do not reflect the actual production situation of sawnwood in China. At present, the main problems are that large numbers of sawnwood consumers buy roundwood and process it themselves. In

TABLE 5.4.1

Production of China's major forest products, 1981-1999

(1,000 m^3)

Year	*Sawn wood*	*Wood-based panels*						*Pulp*[3] *(1,000 m.t.)*	*Paper & paper board (1,000 m.t.)*	*Furniture*[7] *(1,000 pieces)*
		Total	*Ply wood*	*Fibreboard: Total*	*Fibreboard: MDF*	*Particle board*	*Other wood-based panels*[2]			
1981	13,010	996	351	568	-	77	-	4,060	5,400	
1985	15,910	1,615	5,390	950	50	182	-	6,150	9,110	116,410
1990	12,850	2,359	7,590	1,172	87	428	-	8,350	13,720	163,720
1991	11,420	2,842	1,054	1,174	137	614	-	10,750	14,790	214,380
1992	11,190	4,167	1,565	1,445	286	1,159	-	11,990	17,250	216,500
1993	14,010	5,505	2,125	1,810	310	1,571	-	15,290	19,140	308,670
1994	12,940	6,647	2,606	1,930	500	1,682	429	17,050	21,380	505,140
1995[1]	41,840	16,846	7,593	2,164	537	4,351	2,738	18,620	28,120	618,650
1996	24,420	12,032	4,903	2,055	695	3,383	1,692	19,036	26,380	501,640
1997	20,120	16,484	7,585	2,759	1,059	3,604	2,537	17,366	27,330	438,940
1998[5,6]	17,880	10,563	4,465	2,195	2,000	2,663	1,240	16,520	27,800	87,006
1999[6]	15,860	15,031	7,276	3,906	3,500	2,410	1,439	17,230	29,000	100,006

[1] Figures in 1995 were from the third national industrial census. The chief reason for substantially higher production of sawnwood and wood-based panels than the preceding years was an incomplete statistical scope in preceding years, which did not include small manufacturers.

[2] Blockboard and excelsior board.

[3] Total pulp. Woodpulp accounts for only 10% as pulp is mainly made from straw.

[4] Of which wooden furniture accounts for 329.6 million pieces, 75% of total volume.

1998 Statistics do not include the production of non State-owned firms with annual production value under 5 million yuan.

[6] The statistical data of furniture in 1998 and 1999 were production value in billion yuan.

[7] Wood and non-wood furniture combined.

Source: China's State Administration of Forestry, 2000.

addition, enterprises operated by local people process roundwood and then use the sawnwood, which results in production not counted into China's total production of sawnwood.

5.5 Development of China's forest product trade from 1981 to 1999

5.5.1 *Main characteristics of trade*

China's forest product trade expanded and developed along with implementing the policy of reform and opening-up. China's forest products trade has always been small in volume and formerly the trade partners were limited to the Soviet Union and some countries in Eastern Europe. China's forest products trade over the past twenty years shows that forest product trade has played a very important role in national economic development and in satisfying people's living needs. The forest product trade has the following obvious characteristics.

5.5.1.1 *Trade focussed on imports*

Because of China's extreme lack of forest resources, with average standing timber volume of only 8.6 m^3 per capita (only 14% of the average world level), the forest products trade is mainly unilateral import trade with little export. In 1998, for example, the import volume of six chief categories, namely roundwood, sawnwood, plywood, veneer, pulp and waste paper, and paper and paperboard, reached $6.3 billion, while the export volume of these same products reached only $335 million, equivalent to only 5.3% of the import volume.

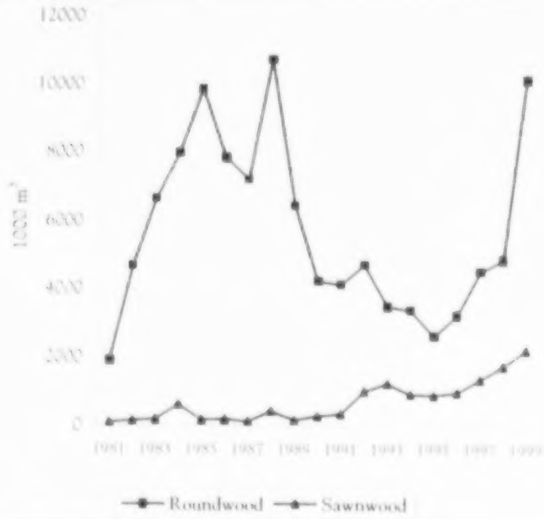
China's imports of forest products over the last 2 decades have expanded dramatically. Reduced domestic harvests combined with greater and greater production capacity have led to an explosion of roundwood imports, more than doubling in 1999 to over 10 million m^3 (graphs 5.5.1 and 5.5.2).

Sawnwood imports also expanded over the last two decades and accelerated in the last two years (graphs 5.5.1 and 5.5.2). Plywood manufacturing capacity is increasing, partly through foreign investments necessitating higher veneer log imports but reducing plywood imports. Plywood imports have fell back in 1999 to a level of 10 years ago (graphs 5.5.3 and 5.5.4).

Paper manufacturing capacity is also increasing, again due to joint ventures and foreign investment, and imports of pulp and waste paper for pulping doubled from 1997 to 1999 (graphs 5.5.5 and 5.5.6). Despite increased manufacturing, the skyrocketing demand for paper products has resulted in growing imports of paper and paperboard.

GRAPH 5.5.1

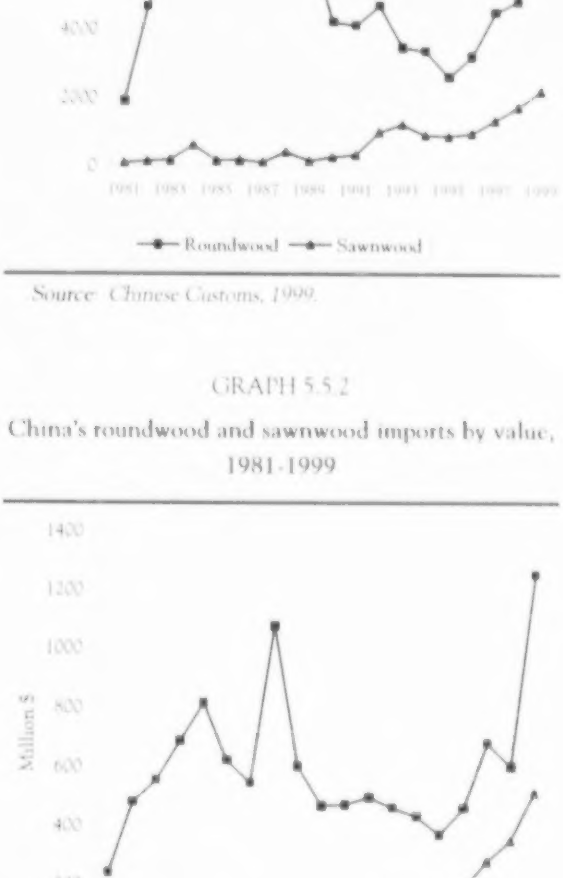
China's roundwood and sawnwood imports by volume, 1981-1999



Source: Chinese Customs, 1999.

GRAPH 5.5.2

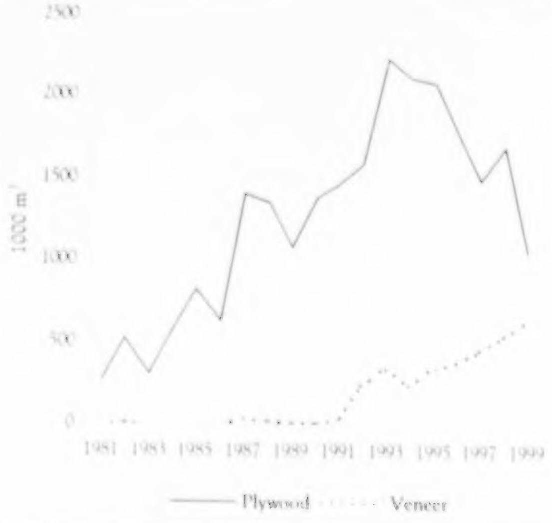
China's roundwood and sawnwood imports by value, 1981-1999



Source: Chinese Customs, 1999.

GRAPH 5.5.3

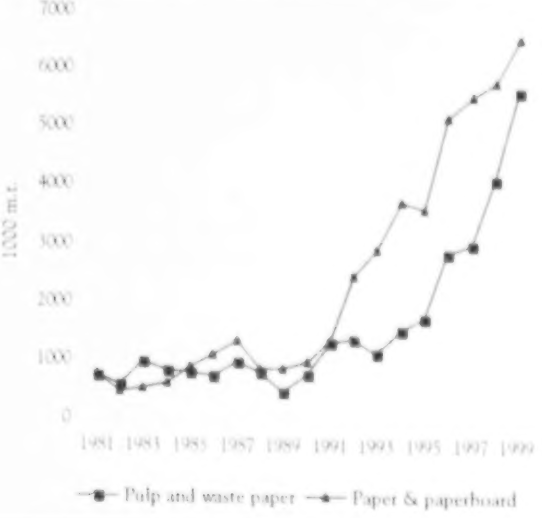
China's imports of plywood and veneer by volume, 1981-1999



Source: Chinese Customs, 2000.

GRAPH 5.5.5

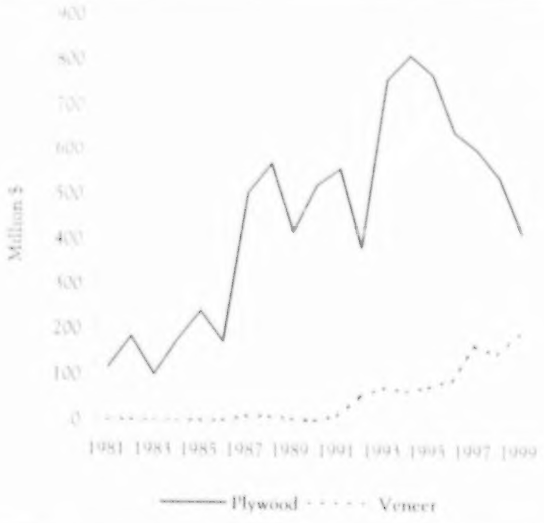
China's imports of pulp, waste paper and paperboard by volume, 1981-1999



Source: Chinese Customs, 2000.

GRAPH 5.5.4

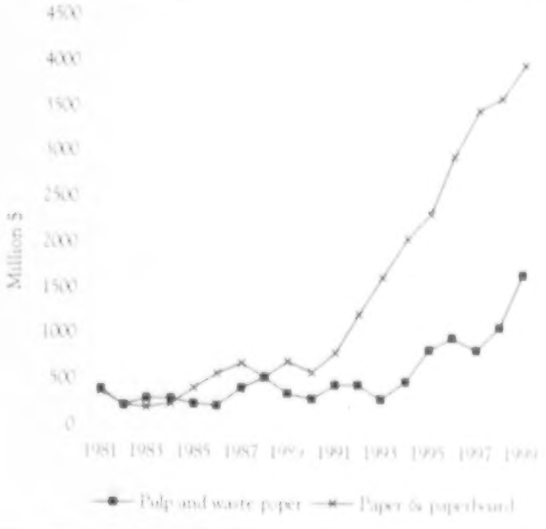
China's imports of plywood and veneer by value, 1981-1999



Source: Chinese Customs, 2000.

GRAPH 5.5.6

China's imports of pulp, waste paper and paperboard by value, 1981-1999



Source: Chinese Customs, 2000.

5.5.1.2 Import value of forest products ranks first among all of China's commodities imported

During the period 1981-1992, China had a total cumulative import of $22.05 billion of forest products representing 2.5% of total value of commodity imports. If calculated according to the value of commodity imports, forest products imports ranked fourth, the first three being steel products, grain and chemical fertilizers. However, over the last few years, with the changes of domestic resources and market demands, the structure of commodity imports has changed tremendously. In 1999, forest products took the first place among the various import commodities (table 5.5.1).

Along with the rapid increase of forest product imports, their proportion to the import volume of all commodities also increased greatly. For example, during the period 1981-1992, the average share of all imports amounted to only some 2.5%, but in the years 1996 and 1997, it had increased to 3.8% and 4.2% respectively, and it further elevated to 4.5% in 1998. In 1998, if all forest products imported were converted into roundwood, the total import volume exceeded 50 million m^3, equivalent to about one quarter of the total consumption of China's industrial roundwood.

5.5.1.3 Structure of forest products imports

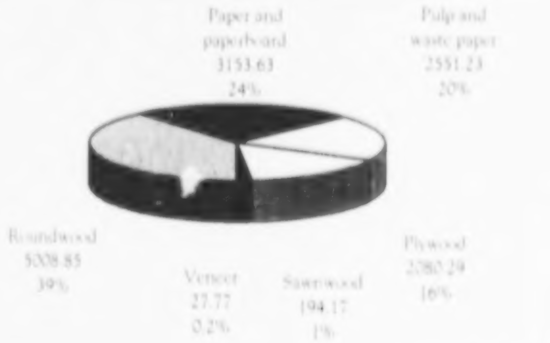
During the period 1981-1988, China's forest products imports were mainly roundwood, the accumulated import value in 8 years was about $5 billion, representing 38.5% of total import value of forest products in the same period ($13 billion) (graph 5.5.7). Total value of forest products imports rose from $1.1 billion in 1981 to $2.8 billion in 1988 to $8 billion in 1999.

Over the last several years, due to the increasing number of countries restricting export of roundwood, prices of roundwood are rising continuously. In addition, the demand structure in China's market has changed and the structure of imported forest products in China also changed correspondingly. By 1998, paper and paperboard took the first place (56.8%) in the total import volume of forest products. Next were pulp and waste paper, roundwood, sawnwood, plywood and veneer respectively (graph 5.5.8).

GRAPH 5.5.7

China's major forest product imports cumulative, 1981-1988

($ million, %)



Source: Chinese Customs, 2000.

TABLE 5.5.1

Volume, value and ranking of major commodity imports in China, 1997-1999

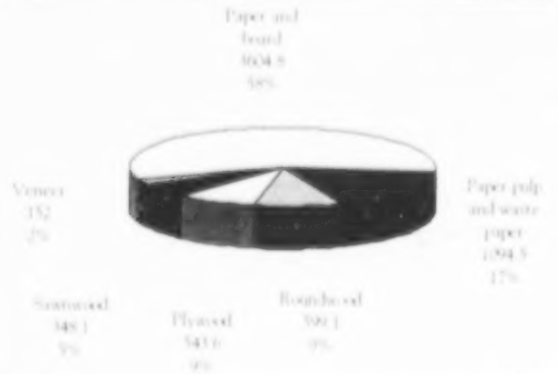
	1997			1998			1999		
Commodity	Volume	Value $ million	Value ranking	Volume	Value $ million	Value ranking	Volume	Value $ million	Value ranking
Forest products, total	16,927	6,030	3	14,358	6,340	1	26,134	8,030	1
Crude oil (1000 ton)	59,260	9,140	1	49,060	5,680	3	57,430	7,340	2
Steel products (1000 ton)	13,230	6,520	2	12,420	6,290	2	14,860	7,010	3
Aircraft (unit)	73	2,580	5	81	2,600	4	74	2,320	4
Fertilizers (1000 ton)	16,490	2,990	4	13,850	2,510	5	13,350	2,250	5
Total imports		142,360			140,170			165,720	

Source: China's Customs, 2000.

GRAPH 5.5.8

China's major forest product imports in 1998

($ million, %)



Source: Chinese Customs, 2000.

5.5.1.4 The international position of China's import trade of forest products increases gradually

According to FAO's statistics, the import volume of industrial roundwood in China (including Taiwan Province of China and excluding Hong Kong SAR, similarly hereafter) in 1997 reached 8.9 million m^3, (in which the import volume of Taiwan Province was about 1.8 million m^3, according to ITTO), ranking third in the world, just behind Japan and Korea. The import volume of wood panels reached 6.5 million m^3 (in which the import volume of plywood in Taiwan Province was about 997 thousand m^3, ITTO), ranking third in the world, just behind the United States and Japan. The import volume of paper and paperboard was about 10.5 million m.t. (in which the import volume of Taiwan Province was 4.5 million ton, PPI), ranking second in the world, just behind the United States. The import volume of waste paper reached 3.4 million tons, ranking first in the world; the import volume of wood pulp was 2.5 million tons, ranking fifth in the world. In China, the import value of forest products increased from $4.5 billion in 1991 (seventh place) to $12.4 billion in 1997 ranking it third in the world behind the United States and Japan. Worldwide, the percentage of China's import value of forest products in the global import volume of forest products increased from 4.2% in 1991 to 8.6% in 1997 (table 5.5.2).

5.5.1.5 China imports forest products from more countries and regions

(i) Imports of temperate forest products

Roundwood. In the past, most softwood roundwood, mainly Douglas fir and hemlock, was imported from the United States. From 1988 to 1989, for example, the share of softwood roundwood imported from the United States, was 62% in the total import volume. However, because United States roundwood became expensive, softwood roundwood imports increased rapidly from Russia, Korea, Canada (mainly hemlock), and New Zealand (mainly radiata pine). Now Russia supplies the greatest amount of roundwood, mainly Korean pine, Mongolian Scots pine, and a small amount of hardwood roundwood (table 5.5.3). China imported a small amount of temperate hardwood roundwood, which included ash and xylosma from Russia, maple, cherry and oak from the United

TABLE 5.5.2

China's import value of forest products and the changes of its precedence in global imports of forest products in 1991 and 1997

Country	*Total import value ($ billion)*		*Percentage (%)*		*Ranking*	
	1991	*1997*	*1991*	*1997*	*1991*	*1997*
United States	12.9	24.0	12	16.6	1	1
Japan	12.6	17.2	11.8	11.9	2	2
China	4.5	12.4	4.2	8.6	7	3
Germany	12.6	12.0	11.8	8.3	3	4
United Kingdom	9.0	10.0	8.4	6.9	4	5
Italy	6.4	6.8	6.0	4.7	5	6
France	5.8	5.3	5.4	3.7	6	7
World	107.3	144.3	100.0	100.0		

Note: If the import value of Taiwan Province of China, which was $2.7 billion, was excluded from the total value of China, China's total import value of forest products in 1997 would rank fifth in the world.

Source: FAO, 1998.

TABLE 5.5.3

China's roundwood import sources, 1996-1998

(1,000 m³)

Country	*1996*			*1997*			*1998*		
	Imports (1,000 m³)	*Share (%)*	*Ranking*	*Imports (1,000 m³)*	*Share (%)*	*Ranking*	*Imports (1,000 m³)*	*Share (%)*	*Ranking*
Russia	529	16.6	3	949	21.2	2	1,578	32.8	1
Malaysia	554	17.4	2	733	16.4	3	1,061	22.1	2
Gabon	695	21.8	1	1,024	22.9	1	593	12.3	3
Cameroon	62	1.9	8	320	7.2	5	234	4.9	4
Korea D.P.R	275	8.6	5	356	8.0	4	219	4.5	5
Equatorial Guinea	75	2.3	7	228	5.1	6	202	4.2	6
Papua New Guinea	152	4.8	6	183	4.1	8	185	3.8	7
Myanmar	455	14.3	4	206	4.6	7	182	3.8	8

Source: Chinese Customs, 1999.

States, and beech from Europe (mainly Germany).

Pulp, and paper and paperboard. These products used to be imported mainly from Canada and the United States, and secondly from northern Europe. Because of lower prices, imports from Russia and Chile increased vigorously recently. Imports of bleached sulphate softwood pulp and bleached sulphate hardwood pulp from Russia now exceed that from Canada and the United States.

Sawnwood. China imports relatively small amounts of temperate sawnwood, which is mainly softwood from New Zealand and Russia, and hardwoods from the United States and Canada.

(ii) Imports of tropical forest products

Roundwood. Malaysia has been China's principal source of roundwood for many years, but because of the increasing prices, the import volume of roundwood from western Africa (mainly Gabon) increased vigorously in recent years. From 1996 to 1997, for example, the import volume of roundwood (mainly okoume) was always ranked first among all imported roundwood in China. After the financial crisis in south-eastern Asia, the prices of roundwood imported from Malaysia declined rapidly, and then in 1998 Malaysia became the main source of tropical roundwood again (table 5.5.3).

Sawnwood. China imports tropical sawnwood mainly from Malaysia and Indonesia. In 1998, for example, the import share from Malaysia was 48.3%, and from Indonesia was 38%.

Plywood and veneer. China imports plywood and veneer mainly from tropical countries. Indonesia and Malaysia have been the major exporters of plywood to China for many years. In 1998, the import volume of plywood from both countries together was 94% of China's total (tropical and non-tropical) plywood import volume, and 99.2% in China's total import volume for tropical plywood. Indonesia had a 57.3% market share and Malaysia had a 41.8% share. In 1998, China imported veneer mainly from Malaysia (64.6%) and Cambodia (28.3%), a small amount from the Philippines (3.8%) and Indonesia (3.1%).

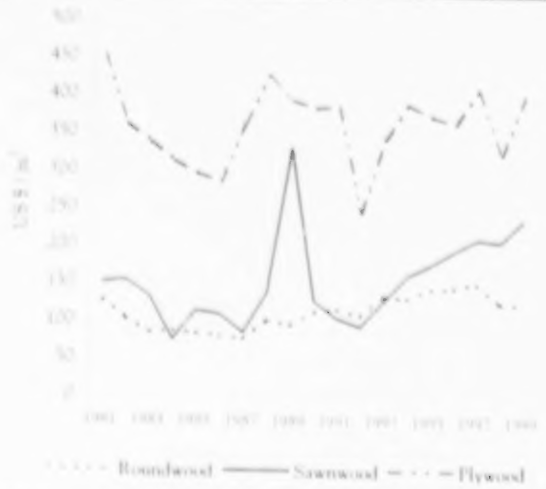
5.5.1.6 Import prices of roundwood and plywood declined significantly under the impact of the financial crisis in Asia

Since the beginning of the 1990s, the average prices of roundwood, sawnwood and plywood have shown an increasing trend in China. However, as a result of the financial crisis in southeastern Asia, the import prices of roundwood and plywood have declined significantly since 1998. This was because the economy and the timber demand declined from other main tropical importers, i.e. Japan and Korea.

The prices of roundwood and plywood decreased by 18.1% and 20.9% over 1997 respectively. However, the sawnwood price decreased only slightly mainly because tropical sawnwood took only a small proportion in total sawnwood. After 1999, along with the rapid economic rehabilitation of southeastern Asian countries, timber demand increased in Japan and Korea, and the prices of plywood and sawnwood rebounded and increased by 24.1% and 14.4% over 1998 respectively. The overall import price of roundwood in 1999, hardwood and softwood combined, remained lower than in 1998, because large quantities of Russian roundwood were imported. The roundwood price was much lower than for tropical roundwood (graph 5.5.9).

GRAPH 5.5.9

Prices of roundwood, sawnwood and plywood, 1981-1999



Source: Chinese Customs, 2000.

5.5.1.7 *Export structure of forest products is being optimized and furniture has become the most important export*

For a long period of time, non-timber forest products (such as fruit, chestnuts, and rubber) and rosin products were China's chief forest products export. The import volume of processed timber products was relatively small and included mainly primary products such as wood chips, sawnwood, chopsticks and toothpicks. Over the last several years, with the development of the forest products industry and the steady increase of foreign investment, exports of high value-added products such as furniture, paper and paperboard have been increasing steadily, with the export structure being continuously optimized (tables 5.5.4 and 5.5.5).

We can see from table 5.5.5 that the export value of paper and paperboard accounted for 40.1% in the total exports of forest products by China by 1996, and furniture took 34.8%. By 1998, the export value of furniture increased rapidly to $ 2.2 billion[5] far ahead of other commodities, which percentage in total export volume increased to 63.8%. Paper and paperboard decreased to the second place, making 28.8% in the total export value of forest products, but was ahead of other forest products in export value.

5.6 China's forests product trade in 1999

5.6.1 *Forest products imports*

In 1999, the total import value of the six chief categories of forest products reached $8.02 billion in China, which was 26.5% higher than in the preceding year, the second highest total so far recorded. Specific analysis for each category of forest products follows, according to the statistical data newly published by Chinese Customs.

TABLE 5.5.4

China's forest products exports (volume), 1995-1999

	1995	*1996*	*1997*	*1998*	*1998*	*% Change 1998-1999*
Roundwood (1,000 m³)	97	64	63	32	23	-28
Wood chips (1,000 m.t.)	1,908	1,849	1,948	1,948	1,601	-18
Sawnwood (1,000 m³)	408	383	388	258	355	+38
Plywood (1,000 m³)	129	177	438	177	423	+139
Veneer (1,000 m.t.)	21	20	31	45	36	+16
Particle board (1,000 m.t.)	5	0.7	11	11	11	0
Fibreboard (1,000 m.t.)	44	3.9	26	14	13	-50
Wood pulp (1,000 m.t.)	27	1.7	13	20	5.7	-71
Waste paper (1,000 m.t.)	16	0.5	4	8	5	-37
Paper & paperboard (1,000 m.t.)	530	799	974	942	897	-5

Source: Chinese Customs, 1999.

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[5] Note: When sitting facilities were excluded, the export value of furniture was $1.4 billion in 1998, taking 40.9% in the total export value of forest products in the same year.

TABLE 5.5.5

China's forest products exports (value), 1995-1999

($ 1,000)

	1995	*1996*	*1997*	*1998*	*1999*	*% Change 1998-1999*
Roundwood	47,153	29,373	29,455	12,459	8,007	-36
Wood chips	174,000	162,816	154,370	154,471	111,837	-28
Sawnwood	195,000	193,845	193,049	114,892	139,375	+21
Plywood	39,070	62,286	151,536	64,960	123,648	+90
Veneer	28,013	27,436	43,097	41,550	46,431	+12
Particle board	2,798	4,696	9,271	4,727	6,854	+45
Fibreboard	12,881	11,081	9,146	5,983	5,339	-11
Wood pulp	17,473	11,345	6,161	8,997	3,032	-66
Waste paper	1,702	460	311	1,000	410	-59
Paper & paperboard		807,066	1000,672	90,791	924,784	-7
Furniture [1]		700,372	1,295,278	2,190,163	2,707,814	+24

[1] Furniture included seats and other furniture. If the seats were not included, the export value of furniture in 1998 was about $1.4 billion. China's total furniture imports in the same year was about $92.7 million; if the seats were not included, it was $31.7 million. In exported furniture, wooden furniture accounted for about 50%.

Source: Chinese Customs, 1999.

5.6.1.1 *Import volume of roundwood doubled and redoubled*

China imported 10.14 million m^3 of roundwood in 1999 worth $1.25 billion, more than double the 1998 figure in volume and value. Of all imported roundwood, tropical roundwood was 4.91 million m^3, accounting for 48.4%, with an increase of 90.4% over 1998. The import value of tropical roundwood was $755.53 million, representing 60.5% of the total roundwood import value.

5.6.1.2 *Import volume of plywood decreased considerably*

The total plywood import volume and value of China in 1999 was 1.04 million m^3 ($415.9 million) decreasing by 38.4% and 23.5% respectively. China's production of plywood is increasing, necessitating greater veneer log imports (not all increases in capacity and production are currently reflected in official statistics). The main import sources for plywood were Indonesia and Malaysia. The plywood imports from these countries were 588,432 m^3 and 331,316 m^3 respectively, accounting for 56.4% and 31.8% of the total. Compared with 1998, the imports from Indonesia were down 56.5%, and from Malaysia, down 50.5%.

5.6.1.3 *Imports of tropical sawnwood increased considerably*

The import volume of sawnwood in 1999 was 2.18 million m^3, increasing by about 28% in 1997 and 1998. Its total import value was $513 million, increasing by 47.4% over 1998. Of all imported sawnwood, tropical was 1.29 million m^3, accounting for 59.1%, up 65.8% over 1998. Its increase was much more than that in 1997-1998 (17.6%). The total import value of tropical sawnwood was $321.54 million, accounting for 62.7% of the total sawnwood import, increasing by 96.3% over 1998.

The veneer import of China in 1999 was 641,293 m^3, which was up 19.6% over 1998, a bit higher than that from 1997 to 1998 (18.1%). The total import value of veneer was $204.98 million, increasing by 34.8% over 1998. Of all veneer import, 95.9% were from tropical countries with 615,244 m^3. The total import value of tropical veneer reached $184.85 million, accounting for 90.2% of the total veneer import.

5.6.1.4 *Characteristics of imports*

In 1999, China imported 3.1 million tons of pulp, which was 40.9% higher than in the preceding year; imported 2.52 million ton of waste paper, which was 92.5% higher than in the preceding year; and cost $1.66 billion for both pulp and waste paper, which was 51.6% higher than in the preceding year. 6.52 million tons of paper and paperboard were imported, which was 12.9% higher than in the preceding year; and $3.98 billion was cost, which was 10.8% higher than in the preceding year. However, the import volume of paper products decreased from 507.4 thousand tons in the preceding year to 390.1 thousand tons, with a decrease of 23.1%. Paper manufacturing capacity has increased substantially in recent years and further increases are expected.

The above-mentioned conditions indicated the improvement in the structure of China's forest product import, which was mainly shown in the following aspects: First, the import volumes of roundwood and waste paper, which are raw material commodities, rose sharply, by 110.2% and 92.6% respectively, while the rate of growth in 1997 and 1998 was only 7.9% and 18.3% respectively.

Second, the imports of plywood and paper product, which are finished commodities, decreased greatly by 38.4% and 23.1% respectively. This case rarely took place before in China's importing history.

Third, the increasing rates of imports of semi-finished products such as sawnwood, veneer, paper and paperboard maintained normally, which were the same as that in 1998 (the increasing rates for paper and paperboard were 12.9% in 1999 and 4.5% in 1998).

In 1999, the imports of roundwood and waste paper increased rapidly, while that of plywood and paper products decreased sharply. Reasons for this situation are summed up as follows:

The Natural Forest Protection Programme launched by the central government increased the shortage of large diameter roundwood for the domestic markets. The conflicts between supply and demand were aggravated especially with respect to roundwood for plywood, roundwood for sawnwood, roundwood for interior housing decoration, and roundwood for furniture.

After the Chinese government implemented new import tariffs on roundwood (0%), sawnwood (0%), plywood (15%), veneer (5-15%) and paper (12-20%), and relaxed restrictions on the companies engaging in timber import, economic interest drove a large number of enterprises and individuals which had never engaged in timber trade to rush into the field of timber circulation. This was a main reason for blind importing, disordered competition, and suddenly overstocked timber at ports.

China expressed a serious shortage of domestic wood pulp, and had to import partial foreign wood pulp to satisfy the needs of domestic markets for wood pulp. This trend of trade would continue further.

Domestic plywood enterprises could use low-price imported roundwood to produce plywood which were competitive with foreign plywood in both price and quality.

Along with the economic recovery of major plywood importing countries, such as Japan and Korea, and the increase of plywood demand, prices of plywood from south Asia, rebounded considerably. The average price C.I.F of plywood in China, for example, increased from $\$321/\text{m}^3$ in 1998 to $\$400/\text{m}^3$ in 1999, an increase of 24%.

5.6.2 Forest product exports

In 1999, China exported a total of $1.36 billion of the six chief categories of forest products, (i.e. roundwood, sawnwood, plywood, veneer, pulp, waste paper, and paper and paper products), which increased by 10% over 1998. However, when exports of furniture and wood chips were included, the total export value reached $4.19 billion, which increased by 17.2% over 1998. The export value of furniture reached $2.7 billion, which increased by 23.7% over 1998, which percentage in the total export value increased from 61.2% to 64.6%. In the meantime, exports

TABLE 5.6.1

China's forest product exports, 1999

Commodity	*Volume*	*% Change 1998-1999*	*Value ($ 1,000)*	*% Change 1998-1999*
Roundwood (1,000 m^3)	23.0	-28.1	8007	-35.7
Wood chips (1,000 m.t.)	1,601	-17.8	111,837	-27.6
Sawnwood (1,000 m^3)	355	37.6	139,375	21.3
Plywood (1,000 m^3)	423	139.0	123,648	90.3
Veneer (1,000 m.t.)	36	16.1	46,431	11.7
Particle board (1,000 m.t.)	11	0	6,854	45.0
Fibreboard (1,000 m.t.)	13	-50	5,339	-10.8
Wood pulp (1,000 m.t.)	5.7	-71.2	3,032	-66.3
Waste paper (1,000 m.t.)	5	-37.5	410	-59.0
Paper & paperboard[1] (1,000 m.t.)	897	-4.8	924,784	-6.7
Furniture[2]	N.A.	N.A.	2,707,814	23.6
Total			4,189,367	17.2

[1] Values for paper and paperboard were estimated according to average import price of the same year; paper products were included (the same below);

[2] Including seating and other furniture and components. Total export value of furniture, excluding seating, was $1.7 billion, of which, $784 million was exported to the United States. In exported furniture, wooden furniture accounted for about 60.7%.

Source: Chinese Customs, 2000.

of pulp, waste paper, paper and paperboard all declined, especially pulp (-65.2%) (table 5.6.1). Nevertheless, exports of paper and paperboard still took a percentage as high as 22.1% in the total export value of forest products.

Over the last two or three years, furniture exports have developed rapidly, owing to large quantities of foreign funds invested in China. Almost all furniture enterprises in Hong Kong have transferred to the mainland of China, while furniture manufacturers in Taiwan and Singapore have also begun to transfer to the mainland of China because of the high costs of labour and land in their original places. These foreign enterprises concentrated mainly in the provinces of Guangdong, Jiangsu and Fujian, and used imported wood to produce finished or semi-finished products to export.

China exported furniture mainly to the United States. In 1999, for example, China exported $1.654 billion of furniture (excluding chairs), of which the export value to the United States was $784 million (47.4% of the total).

China exported wood chips mainly to Japan, and a small amount of wood chips to Korea and Taiwan.

5.7 Consumption of major forest products, with international comparisons

5.7.1 *Consumption of industrial roundwood*

Section 4.1 reported China's roundwood production. Since official statistical production cannot reflect fully China's actual situations of roundwood production, we calculated the country's production of industrial roundwood according to the consumption structure of forest resources. The production of China's industrial roundwood obtained by this method is estimated at about 156.5 million m^3 each year in the 1994-1998 period.

In 1998, China imported 10.14 million m^3 of roundwood, 2.18 million m^3 of sawnwood, 1.04 million m^3 of plywood, 641,293 m^3 of veneer, 5.61 million tons of pulp and waste paper and 6.52 million tons of paper and paperboard. If the above-mentioned commodities are converted to roundwood equivalent[6], then China imported in 1999 an equivalent of 71.68 million m^3 of industrial roundwood. Thus, China's actual consumption of industrial roundwood in 1999 was approximately 228.18 million m^3 with average per capita consumption of 0.18 m^3, and imported roundwood accounting for about 31.4% of the country's total consumption of industrial roundwood.

According to FAO statistics, the global top 5 consuming countries of industrial roundwood in 1997 were the United States, Canada, China, Brazil and Japan. China's consumption of industrial roundwood was only 113.88 million m^3 in 1997. Obviously, FAO's statistical figures were similar to what we estimated. Even according to our estimation, China's per capita consumption of industrial roundwood is behind both that of these industrial countries and the world average level.

5.7.2 *Consumption of sawnwood*

Reported production[7] of China's sawnwood in 1999 was 15.86 million m^3, and the import volume of sawnwood was 2.18 million m^3. The actual consumption of sawnwood for this year was 17.68 million m^3, with an annual sawnwood consumption of 0.014 m^3 per capita, after deducting exports of 355,000 m^3. Imported sawnwood accounted for 12.3% of total consumption of sawnwood.

According to estimation by FAO, China's production and consumption of sawnwood was 30 and 27.14 million m^3 respectively, ranking the third in the world, just behind the United States and Japan.

5.7.3 *Consumption of wood-based panels*

China's statistics on wood-based panels in 1998 changed in scope (not including the production of non State-owned firms with annual production value under 5 million yuan). China's total production of wood-based panels in 1999, 15.03 million m^3, decreased by 8.8% compared to in 1997. Imports of wood-based panels (including plywood, veneer, particleboard and fibreboard) in the same year was 2.09 million m^3, the actual consumption in 1999 was about 16.68 million m^3 after deducting 447,000 m^3 of total exports of the three above-mentioned three categories. Annual consumption of wood-based panels per capita was about 0.013 m^3. In the same year, imports accounted for 12.6% of the country's actual consumption of wood-based panels.

According to FAO's statistics, China's consumption of wood-based panels in 1997 was 19.15 million m^3, ranking second in the world, only behind the United States.

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[6] The conversion factors used here are: 70% for sawnwood, 50% for plywood and veneer, 1:4 for pulp and 1:5 for paper and paperboard.

[7] Sawnwood production is very decentralized in China, and many sawnwood users buy roundwood and process it themselves. Therefore, it is difficult to give complete statistics for China. The national sawnwood production officially published by relevant department over the years is considerably lower than the actual production.

5.7.4 *Consumption of paper and paperboard*

According to the statistics of China State Light Industry Bureau, the country's production of paper and paperboard in 1999 was 29 million tons, paper and paperboard imports in the same year were 6.52 million tons, and the actual consumption was 35.52 million tons after deducing exports of 897 thousand tons, ranking second in the world. Imports accounted for about 18.4% of total consumption. Annual consumption of paper and paperboard per capita was 28 kilograms, accounting for only 56% of the average consumption (50 kilograms per capita each year, 1997) in the whole world.

FAO statistics showed that China's consumption of paper and paperboard was 38.98 million m^3, ranking the second in the word, behind the United States. However, the annual consumption per capita was only 31 kilograms, accounting for 62% of the world's average per capita consumption (50 kilograms/year/person).

5.8 Projections of demand and supply of China's forest products to 2010

According to predictions by the Sector of Forest Resources Survey and Planning of China, the standing volume of forests in China will reach 11 billion m^3 by 2010, annual net increment will be maintained at 447 million m^3, annual consumption of forest resources will be 384 million m^3, and the predicted annual surplus (excess of increment over fellings) will be 63.19 million m^3. According to this prediction, China's capacity of industrial roundwood supply will be 180 million m^3 (including sawlogs and veneer logs, roundwood used by farmers, and roundwood used for cultivation of fungi) by 2010 (table 5.8.1).

According to the statistics and projections by relevant experts, China's industrial roundwood demand by 2010 will be about 360 million m^3. However, China's capacity of roundwood supply by then will be only 50% of the

TABLE 5.8.1

Projections of China's roundwood utilization to 2010

(1,000 m^3)

		1993	*1995*	*2000*	*2010*
Commercial	Forest resource consumption	154,710	165,230	186,570	212,180
	%	45	49	52	55
	Equivalent of roundwood production	94,370	100,790	113,810	129,430
	%	40	44	47	50
Fuelwood	Forest resource consumption [1]	112,080	91,410	91,290	91,280
	%	33	27	26	24
	Equivalent of roundwood production	95,270	77,700	77,600	77,590
	%	40	34	32	30
Wood consumed by farmers	Forest resource consumption [2]	70,140	73,340	74,880	74,060
	%	20	22	21	19
	Equivalent of roundwood production	42,780	44,740	45,680	45,180
	%	18	20	19	18
Wood used for fungi cultivation	Forest resource consumption [3]	6,880	5,640	5,880	6,470
	%	2	2	2	2
	Equivalent of roundwood production	5,850	4,800	5,000	5,500
	%	2	2	2	2
Total	Forest resource consumption	343,810	335,620	358620	383,990
	%	100	100	100	100
	Equivalent of roundwood production	238,270	228,030	242,090	257,700
	%	100	100	100	100

The recovery rate for wood used by cultivation sector and fuelwood is 85%.

[2] The conversion rate between wood production and its consumption of tree standing volume for commercial wood and wood used by farmers themselves is 61%.

[3] Roundwood used to grow edible fungi and to construct required structures.

Source: China's State Administration of Forestry demands. Therefore, to reduce the pressure from consumption of forest resources, the Chinese government has decided to adopt the following measures to alleviate conflicts between demand and supply:

- Expand the developing scale of the country's fast-growing and high-yielding plantation base for sawnwood;
- Expedite the pace of tending and structuring existing young and medium-aged forests;
- Expand industrial utilization of bamboo culms and agricultural residues;
- Adjust product structure, developing preferentially various kinds of composite wood products (laminated boards, finger-jointed wood, particle board, MDF, artificially combined veneer, and paper and paperboard) by using small-diameter, fast-growing tree species, wood residues, bamboo and agricultural residues as raw materials.

Even if the above-mentioned measures are adopted, experts consider that the gap of 65 million m^3 between supply and demand will remain.

China's forest resources will have a structural shortage by 2010. Especially rare will be large-diameter and high quality trees. There will be a severe shortage of some hardwood species. However, small-diameter trees will be in surplus.

Along with the improvement of people's standard of living and the rapid increase of demand for wood used in interior housing decoration and furnishing, the gap between supply and demand with respect of large-diameter roundwood of high quality (especially of rare hardwood trees) will increase further. As the demands can not be met by domestic timber resources in short term, international timber markets have to be relied on.

According to the foregoing projection and analysis, China's wood imports will not increase considerably in total volume, but will change significantly in imported varieties. Imports of pulp, and paper and paperboard will decline, while the imports of veneer, sawnwood and roundwood will continue to increase, which percentage in total import volume of wood will also be further increased.

The import volume of plywood will depend on competitive roundwood import prices and availability (mainly of tropical roundwood). If more countries forbid or restrict tropical roundwood export, the prices of roundwood and plywood will increase considerably, thus the import volume of plywood will not increase greatly, and the import volume may even decline. Under such conditions, plywood will be substituted by other materials, such as MDF and OSB[8], for its current uses. Large-diameter roundwood of high-quality, to be demanded by people, will not only include tropical hardwood, but may also be substituted by some temperate hardwood and softwood.

According to the projections made in our ITTO project, the gap between supply and demand of industrial roundwood will reach 64.4 million m^3, and the shortage can only be resolved by higher imports of timber and timber products (table 5.8.2).

TABLE 5.8.2

Projections of Supply and Demand of China's Industrial Roundwood[1] in 2010

(1,000 m^3)

Total supply and demand in 2010	
Total demand	360,000
Domestic supply	180,000
Gap	180,000
Substitution volume	
WBP	75,000
Bamboo	14,000
Recovery of waste paper [2]	17,600
Others	9,000
Total	115,600
Actual gap	64,400

[1] Figure of fuelwood not available.

[2] The proportion of woodpulp is calculated by 22%, the amount is 11 million tons, the recycling rate of waste paper is calculated by 40%, roundwood equivalent is 17.6 million m^3.

Source: Report for ITTO Project 25/96 "China's forest production consumption and its demand for the market of international tropical forest products by 2010", 2000.

From table 5.8.3, we can see that, by 2010, China will have to import 64.5 million m^3 of wood (converted in roundwood), which will include 43.9 million m^3 of temperate wood (68.1%), and include 20.6 million m^3 of tropical wood (31.9%). According to the projections, temperate wood will be imported mainly in the form of pulp, paper and paperboard (about 70.6% in the total import volume of temperate wood) and second in the form of roundwood (9.6 m^3, about 21.9%). Tropical wood will be imported mainly in the form of plywood, veneer, and "roundwood for plywood", making 83% altogether in the total import volume of tropical wood. However, the import volume of tropical sawnwood has great potential for increasing and could increase by 172% over 1999 volumes.

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[8] According to recent statistics, there are six OSB manufacturers in China. The total designed manufacturing capacity of all the six manufacturers was 76800 m^3 per year. But because the knowledge and experience of the properties, applications, and performance of OSB are not recognized by the Chinese market, sales have not been good. And since three mills have stopped production, the total manufacturing capacity of the six OSB manufacturers was actually only 30,000 m^3.

Based on the current situation of forest products trade in China, the distribution of forest resources in the world, and the patterns of production and trade of forest products in the world, it is estimated that China will import pulp, paper products, temperate roundwood and temperate sawnwood mainly from Russia, North America, northern Europe and New Zealand. Imports of pulp and paper products from developing countries such as Chile, Indonesia and Malaysia will increase significantly. Tropical forest products such as roundwood, plywood, veneer and sawnwood will be imported in large quantities from Malaysia, Indonesia, and Papua New Guinea, and from western African (such as Gabon, Cameroon, Equatorial Guinea, and Zaire).

TABLE 5.8.3

Forecast of China's imports of forest products, 2010

(1,000 m^3 timber equivalent [1])

	1999	*2010*	
		Total	*of which: Tropical timber*
Paper and paperboard	5,000	25,000	0
Paper pulp	1,500	6,000	0
Roundwood	10,140	15,100	5,500
Plywood [2]	3,800	7.600	7,600
Veneer	2,200	4,400	4,000
Sawnwood	4,480	6,400	3,500
Total	27,120	64,500	20,600

[1] All supplies, demands, substitutes and imports are timber equivalent. The conversion factors for timber to wood-based panels 1:3, to waste paper 1:4, to paper and paperboard 1:5, to pulp 1:4, to plywood 1:2, to veneer 1:2 and to sawnwood 1:1.43.

[2] We assumed that both import and export volumes of plywood are one-third of the total values of wood-based panel.

Source: Report for ITTO Project 25/96 "China's forest production consumption and its demand for the market of international tropical forest products by 2010", 2000.

Chapter 6

Secondary Processed Wood Products Markets [1]

Highlights

- Trade of secondary processed wood products (SPWPs) is growing faster than that of primary products in both temperate and tropical species.
- The United States and the EU are the world's major producers, importers and exporters of SPWPs.
- Volumes of SPWPs traded are difficult to assess from trade statistics, however they are still small compared to primary wood products.
- Furniture is the most traded SPWP in the ECE region and overall the region is a net importer.
- While levels of intra-regional trade continue to grow, imports from outside the region, and especially tropical SPWPs are growing faster.

Secretariat introduction

This special chapter was written by Mr. Pierre-Marie Desclos, a consultant for forest products industries. Our intention is to look closer at the secondary processed wood products sector in order to put them into perspective with the primary wood products sector that we traditionally analyse. These products have a higher unit value than primary products, but are substantially less in volume. We thank Mr. Desclos for this introduction into secondary products and we look forward to his more thorough analysis which will be published, along with considerable statistical information, in a separate *Geneva Timber and Forest Discussion Paper* and presented to the joint Timber Committee and European Forestry Commission Session.

The revised Joint Forest Sector Questionnaire as of this year has a separate section requesting countries' statistics on trade of further processed sawnwood, furniture, packaging and paper products (questionnaire in annex). While questionnaire results were not received in time for this publication, it is our intention to begin to report regularly on this important market which drives part of the demand for primary products. Aside from Mr. Desclos' personal experience and expertise, statistics in this chapter were from Comtrade (the United Nations world trade database) and COMEXT (the European Union trade database) industry associations and international organizations, specifically ITTO and FAO. A section of chapter 14 on tropical timber presents SPWPs from an ITTO perspective.

A Geneva Timber and Forest Discussion Paper is envisaged in 2000 in which the author will expand on the topics addressed in this chapter.

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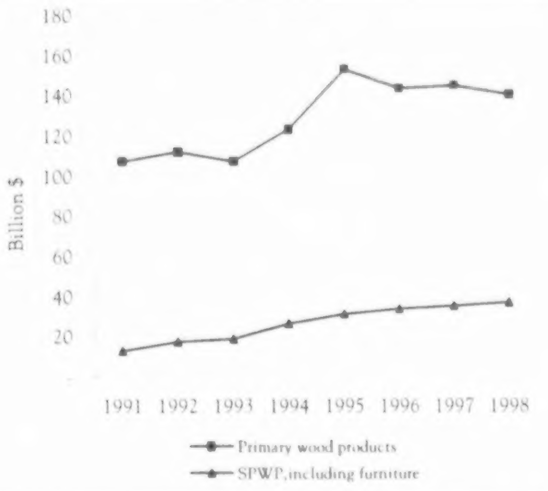
6.1 Introduction

In recent years there has been a rapid expansion of the international trade of secondary processed wood products (SPWPs). This evolution is driven by several factors:

- the development of consumption in various economic areas of the globe;
- a revision of the structure of manufacturing industries, focusing on core-competence, opting for less vertical integration and consequently more out-sourcing ;
- the differential of manpower costs between developing and developed nations;
- the governmental incentives of many developing countries aiming at adding value locally and the resultant investments; and
- improved and competitive delivery logistics.

GRAPH 6.1.1

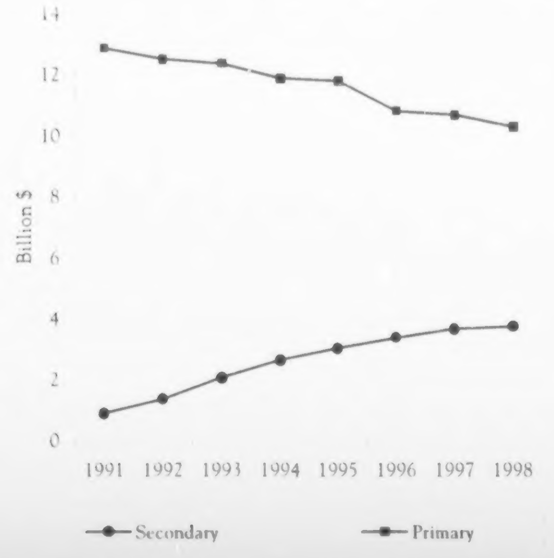
World trade of SPWPs versus primary products, 1991-1998



Sources: FAO, 2000; and Comtrade, 2000

GRAPH 6.1.2

ITTO "consumer countries'" imports of primary and secondary tropical timber products, 1991-1998



Source: ITTO, 2000.

The volumes traded of SPWPs are small compared to primary-processed wood products, such as roundwood, sawnwood, wood-based panels and pulp and paper. However, the value of trade is rising much faster (graph 6.1.1). For the graph, export values are used.

In tropical timber, the inverted trends of imports of primary and secondary products are a result of tropical timber producers drive to produce value-added products (*Annual Review and Assessment of the World Timber Situation, 1999*, ITTO, 2000) (graph 6.1.2).

6.2 Secondary processed wood products

6.2.1 Definitions

In this chapter, SPWPs include essentially wood products and furniture (table 6.2.1). This report will consider the products resulting from further transformation of sawnwood and other wood-based material, excluding further-processed panels sold as such. The range of operations and process is very wide, starting with the cutting to size of components and ending with the manufacture of finished and complex products such as pieces of furniture.

6.2.2 Tracking SPWPs

The trading of SPWPs at any intermediate steps of a given manufacturing process, as semi-finished components or as finished parts, makes their identification and definition at some stages uncertain. It is also worth noting that finished, and even semi-finished products, are rarely made only of wood. They may incorporate chemicals, finishes, hardware, plastic, glass, metal or leather components. This should be remembered when analysing and/or comparing the value of various groups of products. The complexity of analysing all theses factors partly explain why the headings "Other products" are frequently so big.

In some high value-added products, traditionally listed under "wooden" headings, the wood material, in quantity and value, accounts for a very minor share of the final product value.

Considering the specificity of furniture as a product and market group, and to make it more easy to read, this report has divided SPWP in two sectors:

- *wood products*, grouping items listed under HS codes 44: profiles and mouldings, painting frames, packing boxes, coopers' products, tools, builders' joinery and carpentry, tableware, marquetry and other articles; and
- *wood furniture*, grouping items listed under HS codes 94: seats (upholstered seats, seats and furniture for office, kitchen, bedroom and other uses).

The list of products selected to build this report is presented in table 6.2.1. The short descriptions used in the table are as close as possible to the international

TABLE 6.2.1

List of products mentioned in the report and their codes

Harmonized System [1] code	*Product description*
WOOD PRODUCTS	
4409	Continuously shaped wood (including strips and friezes for parquet flooring, not assembled) (moulded tongued, grooved, rebated, chamfered, V-jointed, beaded, rounded, etc.) along any of its edges or faces, whether or not planed, sanded or finger-jointed.
4414	Wooden frames for pictures, paintings, photographs, mirrors, etc.
4415	Wooden packing cases, boxes, crates, drums and similar packings, cable-drums of wood, pallets, box pallets etc.
4416	Barrels, casks, vats, tubs and other coopers' products and parts thereof, of wood, including staves.
4417	Tools, tool bodies, tool handles, broom or brush bodies, show lasts, etc.
4418	Builders' joinery and carpentry, including cellular wood panels 441810 Windows and their frames 441820 Doors and their frames and thresholds 441830 Parquet panels 441840 Formwork (shuttering) for concrete 441850 Shingles and shakes 441890 Other
4419	Tableware and kitchenware, of wood
4420	Wood marquetry and inlaid wood; caskets and cases for jewellery or cutlery, and similar articles, of wood; statuettes and other ornaments, of wood; wooden articles of furniture not falling within chapter 94
4421	Other articles of wood: Clothes hangers, spools, spindles, bobbins, blind rollers, match splints, toothpicks, etc.
FURNITURE	
Seats, with wooden frames	
940161	Upholstered
940169	Others
Wooden furniture	
940330	For office
940340	For kitchen
940350	For bedroom
940360	Other wooden furniture
940390	Parts of furniture [2]

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[1] Nomenclature.

[2] The Comtrade six-digit heading 940390 covers all types of furniture parts, of metal, plastic or other material. In some national systems, eight-digit subheadings identify the wooden parts, such as COMEXT 9403.90-30 or the United States Schedule B 940390-70.

customs nomenclature and in some cases differ from the customary trade terminology. For example, "wood continuously shaped" regroups a wide range of products, each of them traded with specific commercial denomination: strips, friezes, sidings, claddings, panelling, sauna boards, wainscoting, mouldings, rods, dowels, etc.

Species are often used as a classification criteria within some products groups. It should nevertheless be noted that modern manufacturing technologies allow finger jointing, veneer-wrapping, gluing and assembling of different species together and this is frequently done.

6.2.3 Nomenclature

The codes and classification mentioned in this report refer to the Harmonized System (HS), used by most of the world's major trading nations. The 6 digit codes are defined by an international convention. For further differentiation, other digits may be added at a national level and may differ from country to country.

6.2.4 Sources of information

There are several sources of statistics regarding the trade flows of SPWPs. The main sources for this chapter are the following:

- the Comtrade database of the United Nations;
- the COMEXT database of the European Union's Eurostat;
- the United States Department of Agriculture's Foreign Agricultural Service database; and
- the ITTO publications and reports.

The production of finished products is documented by national statistics, even if they are rarely as detailed as the customs statistics.

Due to the impracticability of classification and coding of domestic trade, it is much more difficult to obtain information about products traded locally as semi-finished elements or components. As a consequence it is also difficult to evaluate what percentage of SPWPs is outsourced. Even if there is a growing share of semi-finished SPWPs being outsourced nationally or internationally, the tradition is that many SPWPs are elaborated "in house" and their integrated production cannot be tracked with accuracy by the national statistics offices which are responsible for collecting and processing industrial production and trade data.

Some trade and industry associations, at national or international level, publish data allowing evaluation of the importance of the various industrial sectors or sub-sectors. This is the case, amongst many others, of the European Panels Federation (EPF) and the Fédération Européenne du Parquet (FEP).

6.2.5 Volume, surface, length or value ?

SPWPs can be measured in many ways, but in this report the flows of products are expressed in value. To be of some use, the evaluation of SPWP quantities can be made on a physical basis (volume, length or surface), but only for standard commodities or in reference to detailed specifications.

6.2.6 Geographic scope

This chapter considers the markets of the ECE countries, their trade (import and export) amongst themselves and with the rest of the world.

6.3 Main flows and trade patterns

6.3.1 Total trade

Furniture is by far the main product traded by ECE countries, both as importers and exporters (table 6.3.1)

6.3.2 The wood products sector

The United States and Germany are by far the largest importers of SPWPs, while Canada is the premier exporter (tables 6.3.2 and 6.3.3).

For each major importing and exporting country, breakdowns of imports and exports by products will be presented in the *Discussion Paper*.

TABLE 6.3.1

Imports and exports of SPWPs by ECE countries, 1998

(Value in million $)

	Imports	*Exports*
WOOD PRODUCTS		
Builders joinery & carpentry	4,765	4,889
Continuously shaped wood	1,969	1,423
Packing cases, pallets	1,070	1,098
Marquetry	846	261
Frames for pictures	508	186
Tableware	281	120
Barrels, casks	225	289
Tools and handles	141	111
Other articles of wood	2,114	1,537
Total	11,919	9,913
WOOD FURNITURE		
Upholstered seats	3,824	4,263
Chairs	1,490	849
Office furniture	1,572	1,758
Kitchen furniture	1,606	2,082
Bedroom furniture	2,872	2,733
Other wooden furniture	8,288	8,112
Total	19,653	19,797

Source: Comtrade, 2000.

Ranked by value, imports and exports show similar patterns, except for the cooper's products which are quite localized, both in production and imports (table 6.3.1).

Within the wood products sector, the value of trade in joinery and carpentry is the highest. It includes a wide range of products such as windows, doors, assembled flooring, concrete forms, shingles and shakes.

The main importers and exporters of each product will be presented in the *Discussion Paper.*

TABLE 6.3.2

Main importers of secondary wood processed products[1] (ECE countries), 1998

(million $)

United States	3,490
Germany	2,155
United Kingdom	949
France	617
Italy	600
Belgium and Luxembourg	539
Canada	529
Netherlands	456
Austria	403
Switzerland	371
Spain	301

[1] Continuously shaped wood, builders joinery and carpentry, and other articles of wood.

Source: *Comtrade, 2000.*

TABLE 6.3.3

Main exporters of secondary processed wood products[1] (ECE countries), 1998

(million $)

Canada	1,671
United States	1,007
Germany	846
Italy	821
France	730
Sweden	600
Denmark	564
Poland	548
Austria	507
Belgium and Luxembourg	436
Spain	361
Netherlands	302
United Kingdom	279
Switzerland	110

[1] Continuously shaped wood, builders joinery and carpentry, and other articles of wood.

Source: *Comtrade, 2000.*

6.3.3 *Furniture*

Furniture is a product with a high value-added ratio. In some types of furniture, the wood material used is the very core of the value of the piece of furniture but in others, like some upholstered chairs, the proportion of wood, in value and volume, is minimal while the piece of furniture is still classified under the heading "Seats, with wooden frames". Upholstered furniture has the highest trade value in the ECE, followed by bedroom, kitchen and office furniture (table 6.3.1).

The United States is the world's main importer of furniture (30% of the total import of ECE countries), followed by Germany and France (table 6.3.4). Italy is the leading exporter with 26% of the total exported (table 6.3.5).

TABLE 6.3.4

Main importers of furniture (ECE countries), 1998

(million $)

United States	5,955
Germany	3,256
France	1,729
United Kingdom	1,340
Belgium and Luxembourg	995
Switzerland	936
Netherlands	878
Austria	762
Canada	562
Norway	491
Sweden	379
Denmark	335

Source: *Comtrade, 2000.*

TABLE 6.3.5

Main exporters of furniture (ECE countries), 1998

(million $)

Italy	5,174
Germany	2,218
Canada	1,669
Denmark	1,558
Poland	1,408
France	960
Belgium and Luxembourg	914
United States	850
Spain	809
Sweden	692
United Kingdom	671
Austria	397

Source: *Comtrade 2000.*

TABLE 14.3.1

Composition of exports by producing regions, 1997-1999

(1,000 m^3 rwe)

	Log production			*Log exports*			*Processed exports*			*Total exports*		
Region	*1997*	*1998*	*1999*	*1997*	*1998*	*1999*	*1997*	*1998*	*1999*	*1997*	*1998*	*1999*
Africa	11,089	10,476	10,349	5,338	4,390	3,933	3,062	3193	3490	8,400	7,583	7,423
Asia Pacific	84,141	70,258	70,202	10,233	8,019	8,570	37,206	34,271	34,378	47,439	42,290	42,948
Latin America	31,436	32,245	32,840	236	234	255	3,654	3,091	2,351	3,890	3,325	2,606
Total	126,667	112,979	113,391	15,808	12,643	12,757	43,922	40,560	40,216	59,730	53,203	52,973

Note: totals may not sum exactly due to rounding.

Source: ITTO, 2000.

TABLE 14.3.2

Tropical timber export ratios, 1997-1999

	Log exports as a % of production			*Log exports as a % of total exports*			*Processed exports as a % of total exports*		
Region	*1997*	*1998*	*1999*	*1997*	*1998*	*1999*	*1997*	*1998*	*1999*
Africa	48	42	38	64	58	53	36	42	47
Asia Pacific	12	11	12	22	19	20	78	81	80
Latin America	1	1	1	6	7	10	94	93	90
Total	12	11	11	26	24	24	74	76	76

Source: ITTO, 2000.

TABLE 14.3.3

Tropical forest products exports, 1997-1999

(1,000 m^3)

	1997	*1998*	*1999*
AFRICA			
Logs	5,338	4,390	3,933
Sawnwood	1,212	1,284	1,376
Veneer	309	354	382
Plywood	117	80	113
ASIA PACIFIC			
Logs	10,233	8,019	8,570
Sawnwood	3,740	3,826	3,862
Veneer	977	943	1,013
Plywood	12,410	11,094	11,054
LATIN AMERICA/CARIBBEAN			
Logs	236	234	255
Sawnwood	1,101	946	592
Veneer	15	16	14
Plywood	705	582	542
TOTAL			
Logs	15,808	12,643	12,757
Sawnwood	6,053	6,057	5,830
Veneer	1,301	1,313	1,409
Plywood	13,232	11,757	11,708

Source: ITTO, 2000.

14.3.1 Logs

Graph 14.3.1 shows the major ITTO tropical log exporters in 1997 to 1999, ranked by 1998 export volume. Total ITTO producer member exports were just over 12.6 million m^3 in 1998. Log exports by producer members increased by 1% in 1999 to just under 12.8 million m^3. Malaysia continues to dominate the trade in tropical logs with almost 5.6 million m^3 exported in 1998, constituting 44% of ITTO producer member exports. Malaysia's log trade in 1998 decreased in volume by 15% from 1997 levels but increased to 6.0 million m^3 in 1999. The reduction in 1998 was due mainly to decreased exports from the east Malaysian state of Sarawak. Malaysia's major log customers are all in Asia, with Japan, China (including Taiwan Province of China) and India accounting for 91% of the reported log export volume in 1998.

Papua New Guinea was the third largest tropical log exporter, with exports of 1.6 million m^3. Exports from PNG decreased almost by half in 1998 as the country was hard hit by the Asian economic crisis. The bulk of PNG's log exports (73% in 1998) go to Japan and the Republic of Korea, with the Philippines' market accounting for about 9% in 1998 (mainly in lower grades). Official log export statistics for Myanmar (the sixth largest log exporter in 1998 at 656 418 m^3 not shown in the graph) showed an increase of 36% in 1998, but all exports may not be accounted for by official figures. Myanmar's main trading partners are India, Thailand, Japan and China.

Africa supplies the majority of the remainder of world tropical hardwood log exports. Gabon and Cameroon are the region's largest exporters (and ITTO's second and fourth largest), but Republic of Congo, Central African Republic, Democratic Republic of Congo, Côte d'Ivoire and Liberia also exported substantial quantities of logs in 1998. Gabon and Cameroon experienced decreases (38% and 9%, respectively) in 1998 exports as trade to Asia plunged. Côte d'Ivoire's exports fell by over two-thirds in 1997 as log export restrictions took effect. Cameroon also imposed limitations on log exports in 1999, further reducing African exports. Ghana, a former top exporter, has banned exports of tropical hardwood logs since 1995. The resolution of Liberia's civil war that led to drastic decreases in official production and exports until 1996 has led to a resumption of log exports, which doubled in 1997 and increased by 65% in 1998. African exports went primarily to France, China, Italy, Portugal and Japan in 1998.

The recent resumption of Indonesian log exports after a 13-year moratorium does not appear to have resulted in significant official log exports, with less than 100,000 m^3 exported in 1998. Malaysia reported imports of over 400,000 m^3 of Indonesian logs in 1997, but only 7,000 in 1998. In late 1998, Japan reported its first shipments of meranti logs (about 19 000 m^3) from Indonesia since February 1985. Most observers agree that substantial unofficial Indonesian log exports exist, mostly from Kalimantan into the Malaysian states of Sabah and Sarawak.

Re-exports of logs by consumer countries increased by 28% to 110,000 m^3 in 1998, 75% of which was accounted for by inter-European trade. France, Belgium/Luxembourg and Germany were the major log re-exporters in 1998, selling tropical logs mainly to each other. The European tropical log trade, along with total consumer country exports, declined slightly in 1999.

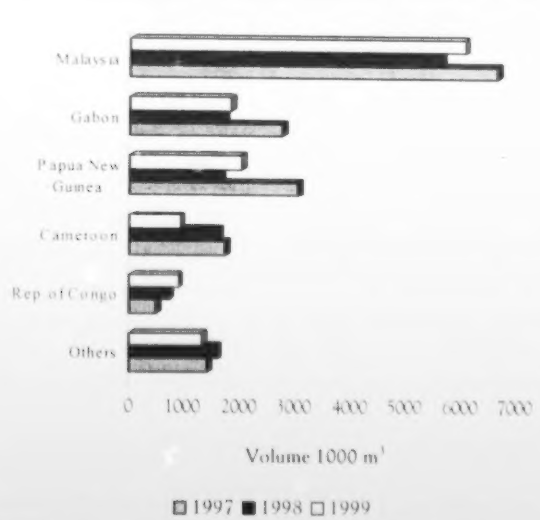
14.3.2 Sawnwood

Graph 14.3.2 shows the major ITTO tropical sawnwood exporters in 1997 to 1999, ranked by 1998 export volume. ITTO producers exported a total of 6.1 million m^3 of tropical sawnwood in 1998, level with 1997. Malaysia continues to dominate the trade in tropical sawnwood, with the 2.7 million m^3 exported in 1998 constituting 44% of total ITTO producing member exports. Malaysia's sawnwood trade fell 9% in 1998 due to the economic crisis and as raw materials continued to be directed to plywood production and other secondary processing. Malaysia's major sawnwood customers in 1998 were mainly in Asia (Thailand, China, Japan, Taiwan Province of China and Republic of Korea) and Europe (the Netherlands, Belgium/Luxembourg, France and Italy).

Indonesian exports of sawnwood almost doubled to 575,000 m^3 in 1998. Indonesia imposed export levies ranging from \$250/m^3 to \$2400/m^3 on all sawnwood exports from 1994 to 1998 and exports during these years

GRAPH 14.3.1

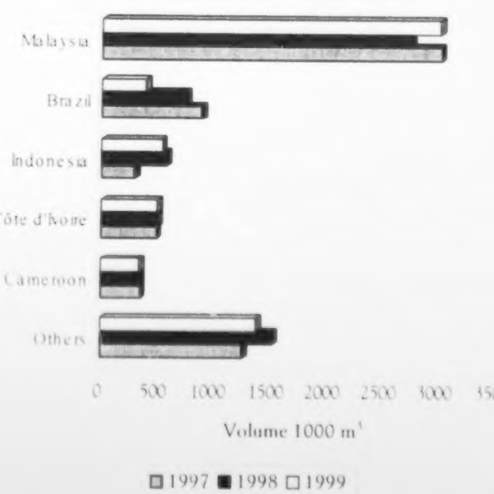
Major tropical log exporters, 1997-1999



Source: ITTO, 2000.

GRAPH 14.3.2

Major sawnwood exporters, 1997-1999



Source: ITTO, 2000.

probably include some further processed products as well as sawnwood. Sawnwood exports from Malaysia, Brazil and Cameroon decreased in 1998, while exports by Côte d'Ivoire increased slightly. In addition to these countries, Myanmar and Ghana exported over 250,000 m^3 of sawnwood in 1998.

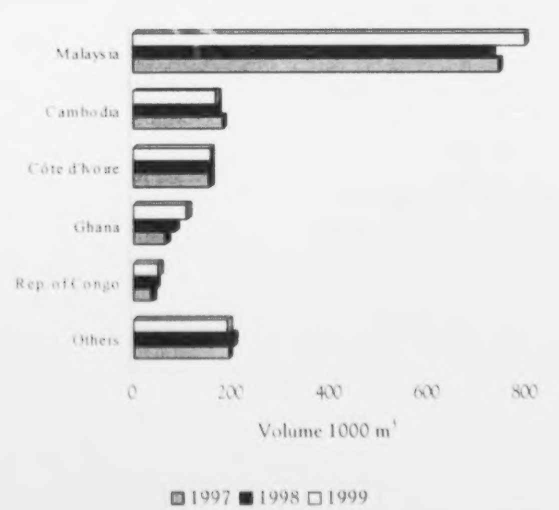
ITTO consumer countries exported 388,000 m^3 of tropical sawnwood in 1998, primarily (86%) from the EU countries. EU exports of tropical sawnwood increased from 167,000 m^3 in 1995 to 335,000 m^3 in 1998. Belgium/Luxembourg and the Netherlands, both larger tropical sawnwood exporters than most producing countries, are the main EU sawnwood exporters. Both these countries saw exports jump in 1998, up 126% to 120,000 m^3 in Belgium and 19% to 80,000 m^3 in the Netherlands. Mostly high-value (or high value-added) species of sawnwood are being exported by these countries, primarily to other countries in Europe.

14.3.3 Veneer

Graph 14.3.3 shows the top ITTO tropical veneer exporters in 1997 to 1999, ranked in order of 1998 export volume. Total ITTO producing member exports were over 1.3 million m^3 in 1998, up slightly from 1997. ITTO producer country veneer exports jumped 8% in 1999 to 1.4 million m^3, the only product for which exports continued increasing through the economic crisis. Malaysia continues to be ITTO's dominant veneer exporter, with exports of 730,000 m^3 in 1998 accounting for 56% of total ITTO producer member exports. Malaysian exports are mainly directed to China, Taiwan Province of China, Japan, the Philippines and the Republic of Korea.

GRAPH 14.3.3

Major tropical veneer exporters, 1997-1999



Source: ITTO, 2000.

Cambodia was the second largest tropical veneer exporter in 1998 at 170,000 m^3, a decrease of 7% from 1997 exports. Cambodia's veneer markets are China and Taiwan Province of China. Côte d'Ivoire is the third largest ITTO tropical veneer exporter with exports stable at 156,000 m^3 in 1998. Côte d'Ivoire's exports are primarily to the EU.

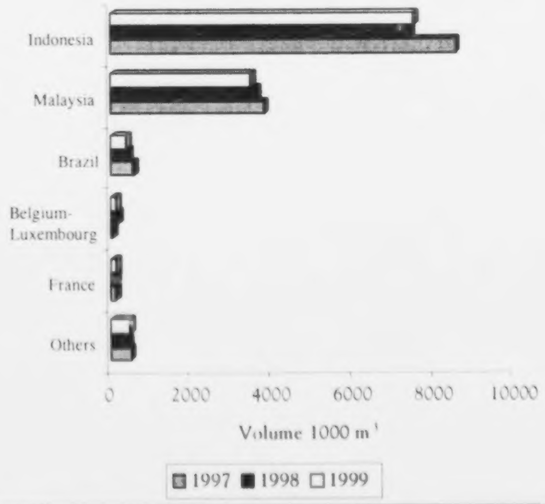
The EU accounted for 65,000 m^3 of total consumer country tropical veneer exports of 77,000 m^3 in 1998, with 1999 levels of EU exports dropping to 61,000 m^3. France, the Netherlands, Belgium-Luxembourg and Germany are the largest EU tropical veneer exporters. Consumer country exports of tropical veneer are usually of much higher value than those from producer countries. Total exports by ITTO consumer countries decreased to 69,000 m^3 in 1999.

14.3.4 Plywood

Graph 14.3.4 shows the major ITTO tropical plywood exporters in 1997 to 1999. In 1998, ITTO producer members exported almost 11.8 million m^3. Tropical plywood exports by producers fell by 11% in 1998, but were stable in 1999. Indonesia continues to dominate the trade in tropical plywood with the 7.4 million m^3 exported in 1998 constituting 63% of total ITTO

GRAPH 14.3.4

Major tropical plywood exporters, 1997-1999



Source: ITTO, 2000.

producer member exports, although this is down from 84% in 1991. Indonesia's exports stabilized in 1999, although with prices already close to production costs for many producers, and with the continuing economic crisis in Indonesia, further declines may be in store.

Malaysia is Indonesia's major competitor in the tropical plywood trade. Malaysian exports decreased by 5% to 3.6 million m^3 in 1998, and dropped further to 3.5 million m^3 in 1999. Malaysia's rapid growth in plywood exports up to 1997 was due to the construction of new plywood mills in Sabah and Sarawak to process formerly exported veneer logs; the two eastern Malaysian states account for almost all of Malaysian plywood exports. In 1998 Malaysia exported almost $1.7 billion worth of plywood, mainly to Japan, China (including Taiwan Province of China), the United States and non-ITTO member Singapore. Latin American plywood exports declined in 1998 to 582,000 m^3 due to a 20% drop in Brazil's exports to 465,000 m^3 (due primarily to the strength of the Brazilian currency). Exports dropped again in 1999 despite Brazil's devaluation, but were offset by increased exports of softwood plywood which may soon exceed exports of tropical plywood. The United States and the EU are the major markets for Brazil's plywood. Africa's plywood exports, remained relatively minor at under 80,000 m^3 in 1998 but jumped to 113,000 m^3 in 1999 led by an increase in Cameroon's exports.

Tropical plywood exports from the EU jumped 51% in 1998, driving ITTO consumer country exports up by 26% to 512,000 m^3 (over 80% from the EU). Consumer exports dropped back to 469,000 m^3 in 1999 due to slower EU exports.

14.4 Imports

Table 14.4.1 provides an overview of the dependence of major ITTO importers on tropical wood products in 1998. Major importers are defined here as those with imports of at least 100,000 m^3 of one or more tropical products. The table indicates in which products each country qualifies as a major importer by entering the relevant figures in bold and italics; only China and Taiwan Province of China qualify as major importers of tropical timber under this criterion in all product categories. Of the ITTO consumer members shown,

TABLE 14.4.1

Tropical proportion of total imports by major ITTO importers, 1998

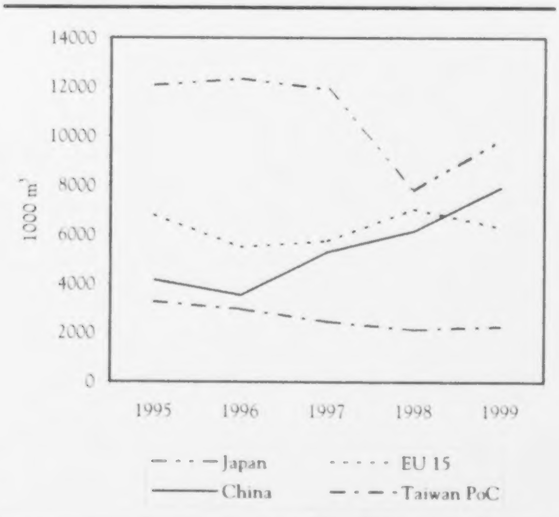
	Proportion (%)			
	Logs	*Sawnwood*	*Veneer*	*Plywood*
Consumer Members				
Belgium-Luxembourg	2.9	***11.5***	27.7	***63.2***
Canada	0.0	0.6	5.3	***17.7***
China	***39.4***	***50.0***	***98.5***	***90.6***
(Taiwan Province of China)	***70.6***	***28.8***	***97.4***	***48.1***
Egypt	10.0	0.2	100.0	***71.4***
France	***50.3***	***12.8***	25.7	***48.0***
Germany	***7.1***	***3.2***	19.9	***17.5***
Italy	***9.3***	***6.4***	49.5	***27.8***
Japan	***22.6***	***9.7***	51.5	***91.0***
Netherlands	19.4	***10.2***	35.7	***41.2***
Portugal	***23.5***	***47.2***	37.5	14.3
Rep. of Korea	***15.1***	***54.6***	58.4	***91.2***
Spain	***18.5***	***26.4***	64.3	4.8
United Kingdom	3.4	***2.8***	15.6	***41.2***
United States	0.7	***0.8***	19.7	***70.5***
Producer Members				
Brazil	28.6	***98.0***	21.1	100.0
India	***99.3***	16.7	0.0	100.0
Malaysia	100.0	***80.5***	100.0	100.0
Philippines	***46.7***	***78.7***	100.0	100.0
Thailand	***91.7***	***88.4***	27.3	0.0

Source: ITTO, 2000.

China (including Taiwan Province of China) appears to be the most dependent on tropical imports. Nearly a majority of its substantial log, sawnwood, veneer and plywood imports are of tropical origin. Unsurprisingly, given the dominance of tropical plywood in international plywood trade, most countries have a fairly high dependence on tropical plywood imports, with China, Japan and the Republic of Korea dependent on tropical sources for over 90% of total imports (although this dependence is decreasing). Tropical sawnwood has a low market share in most non-tropical countries, with only China, Portugal and the Republic of Korea dependent on it for 40% or more of their sawnwood imports. Only Taiwan Province of China and France amongst major consumer countries imported a greater proportion of tropical than non-tropical logs in 1998. In contrast to consumer countries, most of the major ITTO producer country importers depend on tropical imports for the majority of their imported wood needs. This is changing, however, with for example, the Philippines now sourcing more than half of its log imports from non-tropical areas.

GRAPH 14.4.1

Imports of tropical wood products, 1995-1999



Note: Tropical wood products here are logs sawnwood, veneer and plywood together.

Source: ITTO, 2000.

14.4.1 Logs

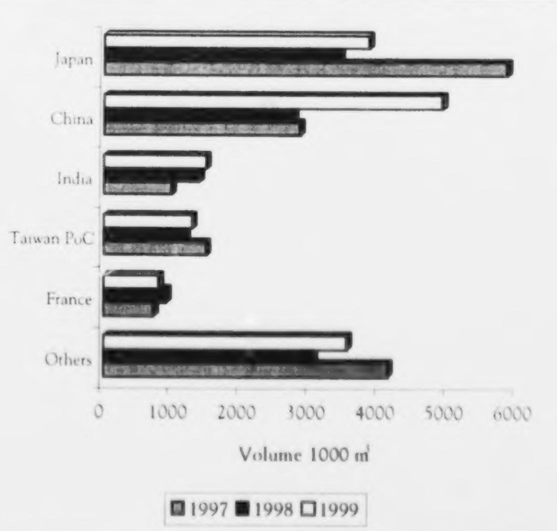
Total imports of tropical hardwood logs by ITTO members (consumers and producers) dropped 21% to under 12.8 million m³ in 1998. Graph 14.4.2 shows the top ITTO tropical log importers in 1997 to 1999, ranked by import volume in 1998. Japan still dominates the global tropical log market, with 3.4 million m³ imported in 1998. Japanese tropical log imports plummeted by 41% in 1998 due to its declining economy and reduced supplies from Malaysia, which nonetheless remained Japan's major tropical log supplier (65%). Japan imported about 95,000 m³ of logs from Africa and 861,000 m³ from Papua New Guinea in 1998. Japan's imports increased to almost 3.9 million m³ in 1999 as its economy recovered.

China is the second largest ITTO tropical log importer, with imports of almost 2.8 million m³ in 1998, almost triple 1996 imports. While the inclusion of available statistics for Hong Kong in China's imports for 1998 accounts for a small part of this increase (most of Hong Kong's tropical imports are eventually re-exported to the mainland), China's growing economy, a relaxation of log import tariffs and a ban on domestic harvesting were the main driving factors (see chapter 5). China's imports leapt another 78% in 1999 to over 4.9 million m³ making it ITTO's largest tropical log importer. India is the third largest importer of tropical logs, at 1.4 million m³ in 1998, mostly from Malaysia and Myanmar but with an increasing component of African logs.

The Republic of Korea is also a major ITTO log importer, absorbing almost 660,000 m³ in 1998 from PNG (46% of total imports) and Malaysia (34%, down from 71% in 1993). Korea's imports were down over 44% from 1997 levels, but rebounded 59% to 1.1 million m³ in 1999 as its economy recovered. Korea, like Japan and some other Asian consumers, is undertaking to shift processing capacity to producing countries, closer to resources and

GRAPH 14.4.2

Major tropical log importers, 1997-1999



Source: ITTO, 2000.

cheaper labour. Korea's imports of logs from Africa grew from 21,000 m^3 in 1992 to 251,000 m^3 in 1994. However, the ban on exports from Ghana (Korea's main African supplier in those years) led to a sharp drop in imports from Africa, to 6,000 m^3 in 1996 before recovering to 31,000 m^3 in 1997. Korea's main African suppliers are now Gabon and Cameroon, from which it imported a total of 16,000 m^3 in 1998. Much of Korea's tropical log supply is now being sourced from the Solomon Islands, which provided 207,000 m^3 of logs in 1997 before a sharp decline in 1998.

The EU countries imported almost 2.8 million m^3 of tropical logs in 1998, most of which came from African producers. European log imports jumped 35% in 1998, offsetting some of the decline in Africa's exports to Asia. France remains the largest of the EU log importers; its imports increased by almost 25% in 1998 to 923,000 m^3 before decreasing by 11% to 820,000 m^3 in 1999. The bulk of France's tropical log supplies come from Gabon, Cameroon and Republic of Congo. Portugal, Italy and Spain are also major European log importers, each with over 350,000 m^3 of log imports in 1998. European log imports decreased 16% in 1999 to just over 2.3 million m^3.

Several ITTO producing countries have become net importers of logs, indicating the extent of wood shortages in their domestic forest sectors. India (1.4 million m^3), Thailand (255,000 m^3), and the Philippines (202,542 m^3) were the major ITTO producer country importers of tropical logs in 1998, reflecting resource scarcity and increased timber demand in these countries. Total imports of tropical logs by ITTO producing members dropped 26% in 1998, to 1.9 million m^3, before rebounding to almost 2.5 million m^3 in 1999, reflecting the recovery in many producer economies.

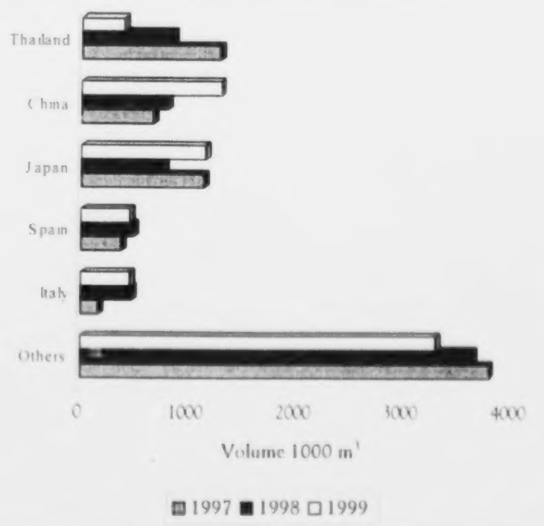
14.4.2 Sawnwood

Total ITTO imports of tropical sawnwood decreased 5% to under 7 million m^3 in 1998 and remained at this level in 1999. Graph 14.4.3 shows the major ITTO sawnwood importers in 1997 to 1999, ranked by order of 1998 import volume. With 1998 imports of over 850,000 m^3, Thailand remained the top ITTO sawnwood importer, although its imports had dropped sharply from the 2.1 million m^3 imported in 1996 before its economy crashed. Thai imports slid to 391,000 m^3 in 1999 as the economic woes plaguing the country continued to take their toll on its large furniture and secondary processing industries. Both Thailand's and Japan's tropical sawnwood imports are primarily from Malaysia (81% and 45%, respectively). Japan dropped to ITTO's third largest tropical sawnwood importer in 1998 as its imports plunged by 33% to 757,095 m^3 before rebounding to almost 1.2 million m^3 in 1999. Japan also imported substantial quantities of sawnwood from Indonesia (44%) in 1998. China became the second largest ITTO importer of tropical sawnwood in 1998 at 800,000 m^3 rising to the top spot with a 61% surge to almost 1.3 million m^3 in 1999. Spain, Italy, Taiwan Province of China, the Netherlands, the United States and Malaysia were also major tropical sawnwood importers. Imports by Taiwan Province of China and Republic of Korea were primarily from Malaysia and (to a lesser extent) Indonesia; Malaysia's were from Indonesia (although no corresponding trade flow was reported by Indonesia); and the others' from Latin America and Africa. As the size of the bar for "Others" in graph 14.4.3 indicates, the tropical sawnwood market is the most diversified of all primary tropical timber products, with the five largest importers accounting for less than half of total ITTO imports in 1998.

Total tropical sawnwood imports by EU countries rose by 29% in 1998 to almost 2.6 million m^3. More than half of this was supplied by Asian producers (principally Malaysia and Indonesia) to the Netherlands, Belgium and Italy. Côte d'Ivoire, Ghana, Cameroon and Brazil supplied virtually all of the remainder of EU imports. EU imports decreased 10% in 1999 to 2.3 million m^3. Spain is the largest importer of tropical sawnwood in the EU, absorbing 489,000 m^3 in 1998 and 450,000 m^3 in 1999. Italy (470,000 m^3), the Netherlands (357,000 m^3), France (337,000 m^3) and Belgium (276,000 m^3) were other major EU tropical sawnwood importers in 1998. All these countries decreased their imports of tropical sawnwood in 1999.

GRAPH 14.4.3

Major tropical sawnwood importers, 1997-1999



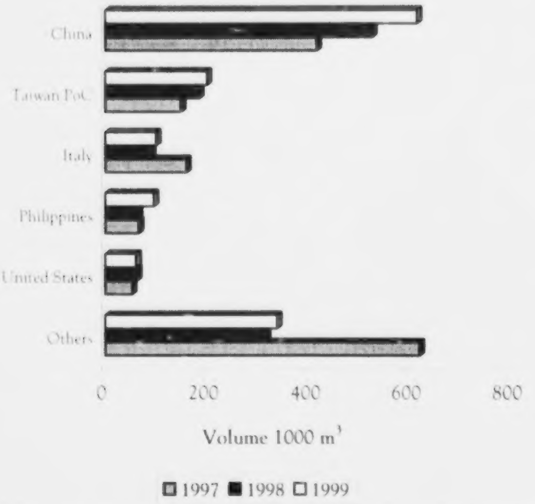
Source: ITTO, 2000.

14.4.3 Veneer

Graph 14.4.4 shows the major ITTO veneer importers for 1997 to 1999. Total ITTO imports of tropical veneer decreased 15% to 1.2 million m^3 in 1998. The drop in imports was due primarily to a 78% drop in demand by the Republic of Korea (the number three importer in 1998) from 263,000 m^3 to 59,000 m^3. Imports by Asian countries are primarily sourced from Malaysia (although China reported imports of over 139,000 m^3 from Cambodia), while the majority of European imports are from African producers (mainly Côte d'Ivoire, but increasingly also from Ghana and the Republic of Congo). The EU absorbed 245,000 and 262,000 m^3 of tropical veneer in 1998 and 1999, one-fifth of total ITTO imports. Japan imported 52,000 m^3 of tropical veneer in 1998, 44% less than in 1997. Japan, with substantial restructuring underway in its wood panels industry, saw tropical veneer imports drop further to 48,000 m^3 in 1999. ITTO tropical veneer imports jumped 13% in 1999 to over 1.4 million m^3 due largely to increased imports by China, which is consolidating its position as ITTO's largest importer.

GRAPH 14.4.4

Major tropical veneer importers, 1997-1999



Source: ITTO, 2000.

14.4.4 Plywood

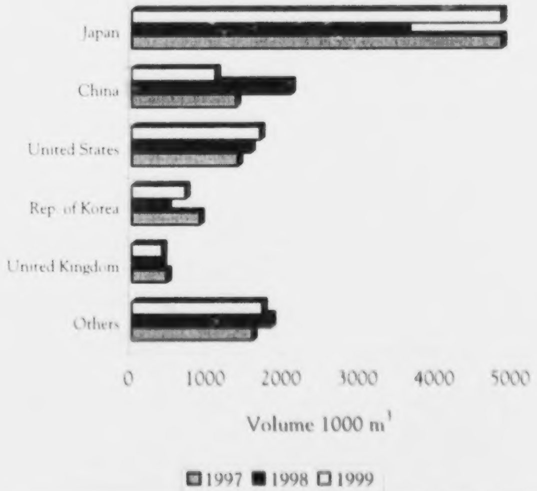
Graph 14.4.5 shows the largest ITTO plywood importers for 1997 to 1999, ranked by import volume in 1998. Total ITTO imports of tropical plywood fell by 6% to just under 9.9 million in 1998. Imports were up 5% in 1999 to over 10.4 million m^3, led by a 35% increase in Japanese demand. Exports of tropical plywood by ITTO members continue to substantially exceed aggregate imports by members, indicating the dominant position of ITTO producers in world markets for this product. The majority of all tropical plywood imports came from Indonesia and Malaysia (65% and 34% respectively in 1998 for the top importer, Japan). Japan continues to replace domestic plywood production with imported plywood (tropical and non-tropical) and substitutes like OSB and MDF. Its tropical imports dropped 26% in 1998 to 3.6 million m^3 due to the slowdown in construction accompanying the recession but recovered the lost ground in 1999. China, with almost 2.1 million m^3, continued as the second largest ITTO importer of tropical plywood with a 52% jump in 1998. However, Chinese imports dropped sharply in 1999 to 1.1 million m^3 as authorities moved to increase domestic plywood production from imported logs to boost employment and offset reduced domestic log supplies. The United States imported almost 1.6 million m^3 of tropical plywood in 1998, 62% from Indonesia, 21% from Malaysia and the rest from Latin America. United States imports, which jumped 12% in 1998, rose another 8% in 1999.

EU imports of tropical plywood totalled just under 1.5 million m^3 in 1998, up 10% from 1997. Most of this supply came from Indonesia and Malaysia, with Brazil and intra-European trade also playing a large role in many countries' imports. European imports of tropical plywood dropped by 6% to 1.4 million m^3 in 1999.

The Republic of Korea (456,000 m^3) and Taiwan Province of China (385,000 m^3) were also substantial

GRAPH 14.4.5

Major tropical plywood importers, 1997-1999



Source: ITTO, 2000.

tropical plywood importers in 1998. Korean tropical plywood imports fell by 49% in 1998 but increased to 700,000 m^3 in 1999. Indonesia has traditionally supplied almost all of Korea's plywood imports, but Malaysia increased its share from 18% in 1994 to 22% in 1998.

14.5 Prices

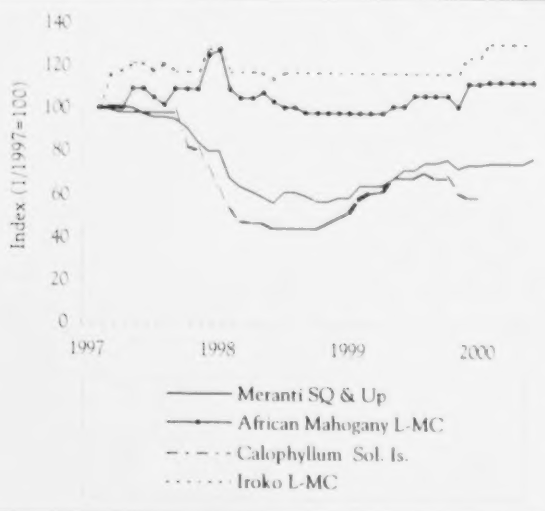
14.5.1 Logs

Real (1990) FOB prices for most important species of African log exports were relatively stable or declining during the 1998 to 1999 period. Prices of n'gollon and, particularly, sapelli were declining between the last quarter of 1998 and the first quarter of 1999. Real prices for n'gollon firmed at around \$220/m^3 (\$230/m^3 nominal) in the first and second quarter of 1999 while prices for sapelli continued declining steadily up to mid-1999 when they stabilized at around \$240/m^3 (\$252/m^3 nominal). This stabilization coincided with the introduction of regulations restricting the export of most log species in Cameroon.

Real export prices of most species of Asian tropical logs showed great volatility between 1993 and 1994 largely due to the perception of log shortages in Asia, brought about by a ban on log exports from Sabah together with tightening supplies from other tropical and non-tropical suppliers. Prices stayed relatively stable from thereafter to the end of 1997 as importers adjusted to the new supply situation. Prices gradually decreased to under \$200/m^3 in 1997 and dropped sharply to just above \$110/m^3 in mid-1998. After the sharp drop during the Asian crisis of 1997 and 1998, most species of Asian logs have been trading at real prices of \$100-\$150/m^3 from the end of 1998. Selangan batu and kapur log prices were relatively stable between mid-1998 and mid-1999 at around \$116/m^3 and \$126/m^3, respectively, although prices jumped briefly to \$138/m^3 (\$145/m^3 nominal) in January 1999. This price spike was caused by the impact of wet weather on forest harvesting and slow business activities due to Chinese New Year festivities in Malaysia. Prices for keruing and meranti logs recovered in 1999 as export markets (particularly China) increased orders for these products.

GRAPH 14.5.1

Tropical log prices, 1997-2000



Source: ITTO, 2000.

In contrast to other species, prices for teak logs were practically unaffected during the Asian financial turmoil, with prices steadily rising during 1998. Prices for 4th and SG-1 teak grades rose to \$1,662/m^3 and \$937/m^3, respectively by mid-1999 (\$1,742/m^3 and \$982/m^3 nominal), fell slightly in August and rose again in late 1999 due to a strong demand for furniture and other joinery products in export markets. Demand and prices for teak are expected to continue rising gradually.

14.5.2 Sawnwood

Real (1990) African sawnwood prices were stable or declining for several important species including mahogany (acajou) and wawa in 1998 to 1999. Prices for mahogany (one of the most valuable African sawnwood export species) rose during most of 1998 to reach \$532/m^3 (\$555/m^3 nominal), as the EU furniture sector (especially the United Kingdom) boosted imports. From the end of 1998 mahogany sawnwood prices fell steadily to \$454/m^3 (\$475/m^3 nominal) by mid-1999, a 14% drop. Prices for mahogany sawnwood rose to the end of 1999 as European markets increased orders of African sawnwood.

Prices for wawa sawnwood increased in 1998. Ghana's restrictions on log harvests and exports of air-dried timber reduced supplies and sent wawa's international prices sharply higher. Prices of wawa stabilized at around \$305/m^3 (\$318/m^3 nominal) in late 1998 but declined in 1999 to under \$285/m^3 (\$299/m^3 nominal) as competition from lower-priced Asian sawnwood, temperate hardwoods and softwoods increased.

After reaching record highs in 1994 and firming somewhat at the beginning of 1996, Asian sawnwood price trends were generally downward until 1997. Light and dark red meranti prices stabilized during the first half of 1997 at around \$700/m^3 (\$750/m^3 nominal) before falling again sharply during the second half of 1997 and first half of 1998. Meranti prices were affected by reduced demand in sawnwood export markets. The decline in the Thai market during the Asian economic turmoil drastically decreased demand for sawnwood in Southeast Asia and was a major cause of price reductions for Asian sawnwood species. Prices of dark red and light red meranti sawnwood were relatively stable in 1998 at around \$418/m^3 (\$435/m^3 nominal) and \$545/m^3 (\$523/m^3 nominal). After declining slightly in the first quarter of 1999, prices of meranti sawnwood rose steadily due to increased domestic and export demand. Importers from China, Thailand, Indonesia and Vietnam were offering higher prices for sawnwood than the Malaysian domestic price, particularly for specifications suitable for the manufacture of furniture.

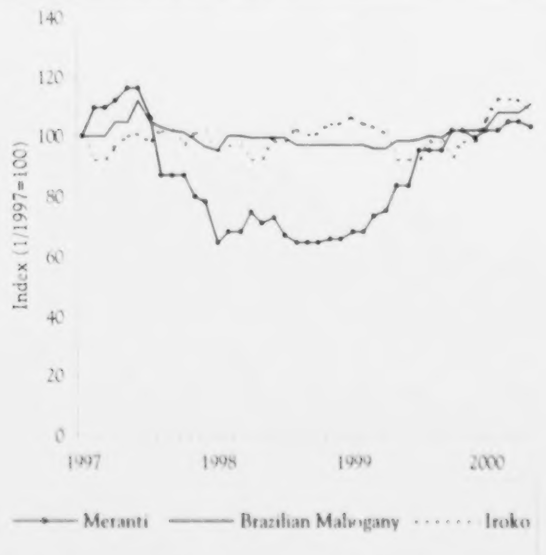
After reaching record highs of over \$950/m^3 (\$1,030/m^3 nominal) and \$479/m^3 (\$520/ m^3 nominal) in mid-1997, Brazilian mahogany and jatoba sawnwood prices declined and stablized at around \$904/m^3 (\$980/m^3 nominal) and \$470/m^3 (\$510/m^3 nominal), respectively, by late 1997. Mahogany prices have risen steadily during 1998 to 1999 as a result of greater demand in the major markets of the United States and Europe and a total ban on logging, processing and trading of this valuable species in Para State of Brazil imposed by IBAMA (the Brazilian environment agency) in 1998. The reason for the ban was the identification of serious illegal logging in this region. Jatoba sawnwood prices also showed a strong upward trend during the last half of 1999, rising by 30%. The relatively strong price trend for Latin American sawnwood is due to continued strong demand in North American and European markets as well as the strengthening of Asian currencies and increased sawnwood demand from that region.

14.5.3 Plywood

Plywood prices from Indonesia, Malaysia and Brazil have, in general, declined since 1996. In mid-1996, prices of Indonesian and Malaysian BB/CC moisture resistant (MR) plywood reached about \$500/m^3 (\$560/m^3 nominal), \$416/m^3 (\$475/m^3 nominal) and \$346/m^3 (\$400/m^3 nominal) for 2.7mm, 3mm and 3.6mm thicknesses, respectively. Prices fell sharply during 1997 and the first quarter of 1998 due to the impact of the Asian financial turmoil and the weaker yen. By mid-1998 prices had halved to about \$233/m^3 (\$245/m^3 nominal), \$209/m^3 (\$220/m^3 nominal) and \$190/m^3 (\$200/m^3 nominal), record lows for these products. Indonesian and Malaysian export prices firmed in late 1998 due to a stronger yen and an active demand for thin plywood in China, and continued an upward trend during 1999. Real prices for these plywood grades were about \$371/m^3, \$321/m^3 and \$320/m^3, respectively, in late 1999, still some 25% below the highs of 1996. Latin American plywood prices have not shown the same degree of recovery observed for Asian plywood. This is particularly notable in white virola, the most valuable Brazilian plywood export species, which has been relatively stable between \$250/m^3 (\$270/m^3 nominal) and \$281/m^3 (\$295/m^3 nominal) between late 1998 and late 1999, despite volume shortages caused by the closure of some virola

GRAPH 14.5.2

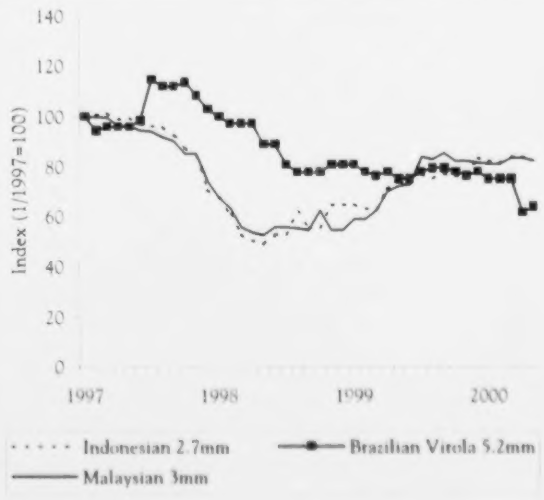
Tropical sawnwood prices, 1997-2000



Source: ITTO, 2000.

GRAPH 14.5.3

Tropical plywood prices, 1997-1999



Source: ITTO, 2000.

plywood mills in the Amazon. Nevertheless, demand for white virola plywood is firming and prices are expected to gradually improve.

14.6 Secondary processed wood products

This section, prepared by ITTO and concentrating on ITTO members is a part of an inter-organization effort to improve the understanding of markets for secondary processed wood products. It complements the analysis in chapter 6. It is hoped that over the next few years, ECE/FAO, ITTO and other partners will be able to improve significantly the quality of data and analysis they make available on SPWPs.

Secondary processed wood products (SPWPs) play an increasingly important role in many tropical countries' forest sectors, in some cases offsetting the recent sharp declines in traditional primary forest products exports. This analysis of SPWPs trade utilizes statistics from the UN Comtrade database.

The primary categories of SPWPs in trade are wooden furniture (the major category, accounting on average for two-thirds of trade values), builder's woodwork (joinery and other builder's wood), products for domestic/decorative use (table/kitchenware, ornaments picture frames, etc.), packaging/pallets, coopers' products (casks, barrels, etc.) and other manufactured products (tools, handles, brooms, shoe lasts, etc.). Since furniture and parts of cane and bamboo have become important tropical forest products exports for many ITTO member countries, the value of these products are also included in this analysis.

14.6.1 Major Importers

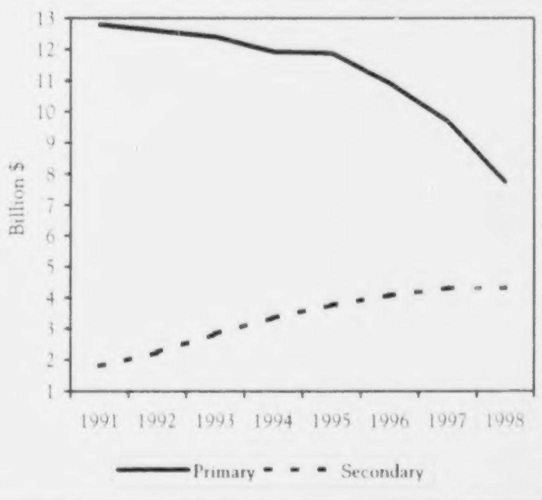
All ten of the world's major SPWPs importers are ITTO consumer members. ITTO consumer country imports of SPWPs from ITTO producers ($4.3 billion) were 15% of total imports of these products from all sources in 1997, an almost constant proportion since 1994. This value was 44% of the total value of primary tropical timber product imports by ITTO consumers in 1997, up from 28% in 1994. This proportion increased in 1998 to over 56% as imports of primary products shrank and those of SPWPs from ITTO producer countries remained stable (graph 14.6.1). Consumer imports from producer countries grew by about 29% between 1994 and 1998, about the same rate of growth as imports from all sources. ITTO consumer imports of SPWPs from other ITTO consumer countries have been constant at about two-thirds of global import value since 1994 and were worth $20.3 billion in 1997.

The top ten ITTO importers accounted for over 88% of ITTO consumer imports of SPWPs from ITTO producers in 1997, down slightly from 89% in 1994. The United States is by far the world's largest single importer of SPWPs and the largest importer from ITTO producer countries. These countries accounted for 20% of its huge $7.8 billion import market for SPWPs in 1997, though this proportion is gradually declining. United States imports come predominantly from other ITTO consumers (62% in 1997). Imports from ITTO consumer countries have more than doubled in value from 1994 to 1998, while imports from producer countries have risen only by 37%.

The EU is the world's largest importer of SPWPs, with its fifteen member states in 1997 importing $15.6 billion worth of these products, led by Germany, France, the United Kingdom, Belgium-Luxembourg, the Netherlands and Austria, which together accounted for over 84% of total EU imports. However, the EU countries import a relatively small proportion (10% in 1997) of their SPWPs from ITTO producer countries. EU imports from ITTO producers have been stable at around 9 to 10% of total SPWPs imports from 1994 to 1997. Although this is a small market share, its value now exceeds $1.5 billion, comparable to United States imports from ITTO producers and more than double the value of Japanese SPWPs imports from ITTO producers. The market share of EU SPWPs imports held by other ITTO consumers has been declining gradually from 71% in 1994 to 65% in 1998. In Germany, the largest EU SPWPs importer ($5.1 billion in 1997), only 7% of the market has been captured by ITTO producers. Japan is the largest market

GRAPH 14.6.1

ITTO Consumer imports of primary and secondary tropical timber products, 1991-1998



Source: ITTO, 2000.

in terms of percentage of imports of SPWPs from ITTO producers. ITTO producers captured 30% of Japan's $2.6 billion market for these products in 1997, still by far the largest share in all of the major markets, despite falling from 37% in 1994. Transportation costs, tariff levels and regional marketing relationships play a role in the differences in market share held by ITTO producers in the major markets for SPWPs, but there is clearly a substantial opportunity for all producing countries to increase their share of the huge European market for these products.

Two-thirds of SPWPs imports by ITTO consumers and by the EU, the leading import region, are wooden furniture. Cane and rattan furniture (18%) and builder's woodwork (mouldings, dowels, etc. (16%)) are far behind as the second and third most valuable types of SPWPs import. France has the greatest proportion of wooden furniture in its SPWPs imports at 74% in 1997.

14.6.2 Major Exporters

Of the top ten exporters of SPWPs as ranked by value in 1997, Italy is by far the world's largest exporter of SPWPs, with over 72% of its exports absorbed by other ITTO consumer countries. Italian exports made up about 32% of the $19.1 billion worth of SPWPs exports of the EU in 1997. The EU accounts for 73% of ITTO consumer exports of SPWPs. Other major exporters include Canada, China, Poland and the United States.

China has experienced rapid growth in SPWPs exports, which almost doubled from 1994 to 1998. This trend is expected to continue, as many companies from Taiwan Province of China and other traditional Asian producers establish furniture and other SPWPs joint ventures in southern China because of its low wages. Combining UN statistics for Taiwan Province of China ($1 billion worth of SPWPs exports in 1997) and China ($2 billion) consolidates China's position as by far the top developing country exporter of SPWPs.

80% of ITTO consumers' 1997 SPWPs exports consisted of wooden and cane/bamboo furniture, mostly shipped to other ITTO consumers. Italy's SPWPs exports are mostly (92%) composed of these categories of furniture, with wooden furniture exports alone valued at almost $5.3 billion in 1997. Cane and bamboo furniture exports from ITTO consumers (where little if any cane or bamboo is grown) were almost $3.5 billion in 1997, compared to only $612 million in total exports of this product by all producer countries.

Indonesia, Malaysia, Thailand, Brazil and the Philippines are the major ITTO producer member exporters of SPWPs, each with exports over $375 million. Other ITTO producer exporters of SPWPs are relatively smaller and include Honduras, Bolivia and India. The top five ITTO producer exporters accounted for 97% of total ITTO producers' SPWPs exports of $4.1 billion in 1997 (up 15% from 1994). To put ITTO producer exports into a global perspective, Italy shipped over $6.1 billion worth of SPWPs to global markets in 1997, about 48% more than the combined value of all SPWPs exports from all ITTO producer countries. ITTO consumer exports increased 27% from 1994 to 1997 while ITTO producer exports increased by only 16%. Exports by both consumers (-4%) and producers (-16%) declined in 1998 due to the economic downturn that was affecting many regions.

Although developing countries enjoy some degree of tariff relief under the Generalized System of Preferences (GSP) or other schemes for SPWPs in many of the major markets, these advantages have been eroded by general tariff reductions in many countries under the Uruguay Round of trade negotiations. Tariffs on SPWPs in many countries remain high, however, compared to those for primary products like logs and sawnwood. This is one reason why the contribution of developing countries to total imports of such products by ITTO consumers is still below their potential. The EU, Japan and the United States apply no import tariffs on SPWPs from GSP countries, while most favoured nation rates range from 2 to 6% on the major product categories. In contrast, many developing countries retain very high tariffs (up to 80%) on these products to protect domestic industries.

Asia Pacific is by far the dominant producing region in terms of SPWPs exports by ITTO producers, with Latin America (primarily Brazil) a distant second. Value-added processing in the African region is still minimal, due largely to a lack of capital and infrastructure, although many African governments such as Ghana, Cameroon and Gabon are making the development of secondary processing a priority. This breakdown between the main tropical regions is unlikely to change significantly, as countries in all three regions continue to express their desire to further expand downstream processing capacity.

After a remarkable export increase of almost 200% from 1991 to 1996, Indonesia's development of downstream processing declined sharply in 1997 and 1998. Indonesia was still the largest ITTO producing country exporter of SPWPs in 1997, with exports over $1.2 billion, though Malaysia was a close second with $1.2 billion and became the largest producer exporter in 1998 when Indonesia's exports crashed with its economy to $739 million. The major categories of Indonesian exports were builder's woodwork (45%) and wooden and cane furniture (29% and 13% respectively) in 1997. Wooden furniture export earnings rose rapidly following Indonesia's log export ban in 1985, from $4.8 million in 1986 to $357.2 million in 1997.

Malaysia's growth of exports of SPWPs between 1994 and 1997 has been the strongest of all producers, expanding from $792.3 million to $1.202 billion. In contrast to Indonesia, Malaysian SPWPs exports are predominantly wooden furniture (75%). About 70% of Malaysian wooden furniture exports are manufactured from rubberwood. Thailand has also linked the development of its furniture industry to its rubberwood resources, with all new sawmill licenses now contingent on use of this material. The ban on logging in Thailand's native forests imposed in 1990 has increased its dependence on imports as well as former rubber plantations for wood supplies; exports of SPWPs have therefore grown more slowly (only 3% from 1994 to 1997) than in Malaysia and Indonesia due to wood supply constraints. Most of Thailand's wooden furniture exports (worth $464 million in 1997) are manufactured at least partially from rubberwood. Both Thailand and Malaysia have been successful in penetrating high value markets with their rubberwood furniture, particularly in Japan. Regulations in both countries favour further processing, restricting exports of raw rubberwood, although the restrictions have been relaxed in Malaysia due to imbalances in domestic supply and demand. Exports from Malaysia and Thailand dropped in 1998 but were not affected as badly as Indonesian exports by the economic downturn.

In contrast to its export performance in 1990-95 when exports grew almost four-fold, Brazil's exports of SPWPs have stabilized at under $500 million, with 58% of these exports composed of wooden furniture and 29% of builder's wood work. Brazil's SPWPs exports go mainly to the major markets of the United States and Europe.

Several apparent anomalies exist in Comtrade statistics reported by trading partners. The statistics reported by the major exporters of SPWPs who reported data to Comtrade can differ substantially from the corresponding import values reported by the major importers of SPWPs. Table 14.6.1 compares the different values reported by the four major producer exporters of SPWPs (in italics) with the import statistics recorded in Comtrade for the EU and ITTO consumers (in bold). The problems identified for some primary products exported by Indonesia also hold for SPWPs, with, for example, a 107% discrepancy with EU import figures. Discrepancies can be due to a number of factors: import figures generally include insurance and freight, while export prices are FOB; partial or non-reporting of exports to Comtrade; differences in measurement methods; differences in reporting periods; smuggling and transfer pricing to avoid taxes; and uncertainty about classification of products. Large discrepancies in reported trade figures should alert governments and industries to the need for remedial action in one or more of these areas.

The development of new processing technologies (e.g. MDF, veneer lamination, etc.) and raw material supplies (e.g. rubberwood) are allowing the use of a wider range of tropical wood species in furniture and other SPWPs production in ITTO producer countries and consequent increases in production and exports. The contribution of SPWPs to the forest sectors of ITTO producers and other developing countries will continue to grow rapidly in coming years, with corresponding reductions in production and especially exports of primary tropical timber products.

14.6.3 SPWPs Prices

After plunging by over 40% (laminated scantlings) and 25% (mouldings) between mid 1997 and mid 1998, real (1990) export prices for most Indonesian SPWPs were relatively stable in late 1998 and 1999 at about $329/m³ ($345/m³ nominal) for laminated scantlings, $553/m³ ($580/m³ nominal) for red meranti mouldings

TABLE 14.6.1

Direction of trade of SPWPs for main partners, 1997

(1,000 $)

Exporter *Importer*	*Indonesia*	*Malaysia*	*Thailand*	*Brazil*	*ITTO producers*
European Union	**779,850**	**206,788**	**145,692**	**299,194**	**1,522,116**
(Reported by exporter)	*375,592*	*170,290*	*121,753*	*264,639*	*1,049,690*
ITTO Consumers	**1,644,176**	**951,510**	**744,020**	**425,074**	**4,313,072**
(Reported by exporter)	*1,006,617*	*900,577*	*678,967*	*422,394*	*3,429,849*

Source: ITTO, 2000.

Grade A and $\$434/\text{m}^3$ ($\$455/\text{m}^3$ nominal) for red meranti mouldings Grade B. Malaysian SPWPs export prices were affected to a lesser extent by the economic crisis in 1997 to 1998, with prices declining by about 10% for laminated scantlings and about 21% for both grades of meranti mouldings. The declining prices for these products were caused by intense price competition between manufacturers in China, Indonesia, Malaysia, Thailand and Vietnam in the face of decreased demand. Malaysian prices for these products were about 10% lower than those from China and Vietnam in late 1998. Malaysian selangan batu decking prices have been less severely hit by competition. Prices declined by 13% from $\$570/\text{m}^3$ ($\$618/\text{m}^3$ nominal) to $\$494/\text{m}^3$ ($\$515/\text{m}^3$ nominal) between September 1997 and March 1998, but have remained relatively stable compared to other SPWPs at around $\$510/\text{m}^3$ ($\$535/\text{m}^3$ nominal) through 1999.

Although prices of value-added products were affected by the Asian economic downturn during 1997 to 1998, the declines were much less severe than the collapse in prices of tropical logs, sawnwood and plywood. Forest sectors in countries such as Indonesia and Malaysia whose export strategies focus on added value products fared better than countries exporting only primary products.

14.7 Conclusion

Tropical timber markets recovered slowly in 1999, with increases in demand for primary tropical products not keeping pace with overall increases in timber consumption in several major markets. China was the exception, sharply boosting demand for tropical logs to feed plywood mills deprived of domestic logs due to a logging ban. Many developing countries in Asia recovered in 1999 and look set to continue growing in 2000, although Indonesia is still struggling. Many tropical countries are now looking to secondary processed wood products to drive their forest sector export recovery, as these products are less susceptible to the sharp price swings that have characterized primary commodity markets in recent years.

Note: Additional statistics for tropical timber are included on the website version of this chapter in: www.unece.org/trade/timber/mis/reports.htm

APPARENT CONSUMPTION TABLES

ANNEX TABLE 1

Sawn softwood apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	4,850	4,320	4,623	4,967	607.4	7.4
Belgium-Luxembourg	1,871	1,875	2,174	1,880	177.7	-13.5
Bulgaria	176	176	176	176	21.3	0.0
Croatia	171	139	218	188	42.0	-13.6
Cyprus	89	85	82	82	104.8	-0.8
Czech Republic	1,824	1,841	2,027	1,940	189.0	-4.3
Denmark	1,809	2,068	4,010	3,636	688.4	-9.3
Estonia	-109	111	175	194	137.6	11.3
Finland	2,375	3,267	3,247	3,652	707.1	12.5
France	8,063	8,291	8,922	9,464	160.7	6.1
Germany	15,985	17,067	16,885	18,121	220.5	7.3
Greece	584	454	465	478	45.0	2.8
Hungary	846	761	724	698	69.3	-3.6
Ireland	662	709	759	898	242.4	18.3
Israel	369	368	368	368	60.3	-0.1
Italy	5,330	5,896	5,925	6,192	108.0	4.5
Latvia	228	511	579	718	300.5	24.0
Lithuania	330	386	588	580	157.6	-1.3
Netherlands	2,678	2,858	2,854	3,296	209.5	15.5
Norway	2,425	2,758	2,752	2,571	578.7	-6.6
Poland	3,829	4,320	4,873	4,690	121.1	-3.8
Portugal	828	879	748	806	81.6	7.7
Romania	369	200	247	352	15.7	42.4
Slovakia	189	231	133	240	44.6	80.7
Slovenia	223	130	327	173	87.2	-46.9
Spain	3,476	3,576	3,635	3,631	91.6	-0.1
Sweden	3,308	4,623	4,033	3,712	417.5	-8.0
Switzerland	1,590	1,354	1,501	1,607	218.8	7.1
The f.Y.R. of Macedonia	30	51	60	79	39.1	31.0
Turkey	2,453	2,129	2,283	2,513	38.3	10.1
United Kingdom	7,431	8,624	8,621	8,856	150.8	2.7
EUROPE	74,369	80,145	84,101	86,844	152.3	3.3
Belarus	823	858	852	870	84.7	2.1
Moldova	82	82	82	82	18.7	0.0
Russian Federation	13,188	12,224	10,984	9,027	61.3	-17.8
Canada	12,978	16,904	17,523	20,641	668.9	17.8
United States	119,060	120,081	122,656	128,470	465.1	4.7
NORTH AMERICA	132,038	136,985	140,179	149,111	485.6	6.4

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 2

Sawn hardwood apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	255	273	292	311	38.0	6.5
Belgium-Luxembourg	745	855	893	373	35.3	-58.2
Bulgaria	44	44	44	44	5.3	1.4
Croatia	84	105	122	136	30.4	11.5
Cyprus	18	18	19	17	22.0	-8.2
Czech Republic	433	337	357	360	35.1	0.8
Denmark	101	56	259	252	47.7	-2.7
Estonia	24	41	21	11	7.5	-49.8
Finland	100	100	106	106	20.4	-0.1
France	3,071	2,832	3,072	3,119	53.0	1.5
Germany	1,393	1,535	1,494	1,908	23.2	27.7
Greece	141	63	72	74	7.0	2.2
Hungary	98	70	-19	-9	-0.9	-50.5
Ireland	41	113	146	160	43.0	9.2
Israel	22	22	21	20	3.3	-1.9
Italy	2,431	2,620	2,796	2,783	48.5	-0.5
Latvia	20	18	88	228	95.4	159.1
Lithuania	56	20	103	116	31.5	12.4
Netherlands	614	596	621	873	55.5	40.5
Norway	85	86	72	84	18.8	16.0
Poland	619	687	876	930	24.0	6.1
Portugal	605	635	544	559	56.6	2.7
Romania	439	423	413	554	24.7	34.0
Slovakia	98	77	291	72	13.4	-75.3
Slovenia	125	124	113	127	64.1	13.1
Spain	1,177	1,555	1,594	1,643	41.5	3.1
Sweden	293	337	352	394	44.3	12.0
Switzerland	134	191	253	234	31.9	-7.5
The f.Y.R. of Macedonia	-27	5	8	8	4.1	-1.4
Turkey	1,789	1,844	1,958	2,018	30.8	3.1
United Kingdom	715	741	596	607	10.3	1.9
EUROPE	15,758	16,437	17,591	18,124	31.8	3.0
Belarus	610	601	600	595	58.0	-0.8
Moldova	56	57	58	58	13.4	1.6
Russian Federation	4,141	3,725	3,747	3,531	24.0	-5.8
Canada	1,069	859	802	795	25.8	-0.9
United States	27,476	28,650	30,653	31,510	114.1	2.8
NORTH AMERICA	28,545	29,509	31,455	32,305	105.2	2.7

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 3

Particle board apparent consumption

(1,000 m^3)

	1996	1997	1998	1999	m^3 per 1000 inhabitants 1999	Change (%) from 1998 to 1999
Austria	741	746	784	934	114.2	19.1
Belgium-Luxembourg	1,382	699	734	686	64.8	-6.5
Bulgaria	122	119	119	115	13.9	-3.1
Croatia	68	77	79	89	19.9	13.1
Cyprus	42	41	40	40	51.5	0.5
Czech Republic	391	447	477	478	46.6	0.2
Denmark	569	672	745	883	167.2	18.5
Estonia	71	93	96	111	78.8	15.9
Finland	433	314	300	295	57.1	-1.7
France	2,461	2,636	2,855	2,904	49.3	1.7
Germany	8,847	9,238	9,425	9,246	112.5	-1.9
Greece	262	269	900	934	87.9	3.7
Hungary	284	341	377	413	41.0	9.5
Ireland	132	157	293	458	123.8	56.5
Israel	124	124	124	124	20.3	0.0
Italy	2,454	3,236	3,390	3,384	59.1	-0.2
Latvia	38	44	42	34	14.2	-19.0
Lithuania	71	75	108	80	21.7	-25.7
Netherlands	547	649	643	794	50.5	23.6
Norway	231	256	268	274	61.7	2.4
Poland	2,024	2,414	2,615	2,237	57.7	-14.5
Portugal	405	307	434	471	47.7	8.5
Romania	288	299	264	295	13.2	11.7
Slovakia	225	257	262	279	51.9	6.5
Slovenia	210	314	335	343	172.3	2.1
Spain	2,167	2,167	3,040	3,125	78.8	2.8
Sweden	693	724	599	633	71.2	5.6
Switzerland	368	347	396	386	52.6	-2.5
The f.Y.R. of Macedonia	158	161	166	171	85.2	3.1
Turkey	1,180	1,722	1,517	1,627	24.8	7.3
United Kingdom	3,094	3,096	3,236	3,113	53.0	-3.8
EUROPE	30,107	32,080	34,703	35,155	61.7	1.3
Moldova	31	31	31	31	7.1	0.0
Russian Federation	1,430	2,302	1,709	1,983	13.5	16.0
Canada	1,857	2,151	1,873	2,682	86.9	43.2
United States	20,186	21,858	24,631	25,810	93.4	4.8
NORTH AMERICA	22,043	24,009	26,504	28,492	92.8	7.5

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 4

Plywood apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	86	88	91	99	12.1	8.6
Belgium-Luxembourg	189	273	224	226	21.4	1.1
Bulgaria	13	22	22	26	3.2	18.2
Croatia	11	8	10	10	2.2	-3.3
Cyprus	8	7	7	7	9.4	-0.7
Czech Republic	63	48	46	44	4.3	-4.3
Denmark	146	169	278	161	30.5	-42.1
Estonia	-4	6	10	21	14.8	102.2
Finland	239	212	186	160	30.9	-14.1
France	703	691	678	666	11.3	-1.8
Germany	1,352	1,391	1,367	1,224	14.9	-10.5
Greece	67	31	29	31	2.9	6.7
Hungary	85	67	49	30	3.0	-38.1
Ireland	38	80	94	101	27.1	6.9
Israel	117	117	117	117	19.2	0.0
Italy	580	601	659	679	11.8	3.1
Latvia	13	11	14	144	60.3	928.6
Lithuania	16	22	26	19	5.2	-25.9
Netherlands	195	341	477	621	39.5	30.1
Norway	81	73	69	71	16.0	2.9
Poland	124	136	149	161	4.2	8.3
Portugal	23	33	35	41	4.2	17.3
Romania	40	35	32	32	1.4	-0.6
Slovakia	71	82	77	-96	-17.8	-225.1
Slovenia	15	22	30	51	25.5	70.4
Spain	169	169	341	326	8.2	-4.4
Sweden	124	144	170	186	20.9	9.5
Switzerland	128	137	140	146	19.9	4.3
The f.Y.R. of Macedonia	76	76	115	155	77.2	33.6
Turkey	85	74	63	52	0.8	-17.5
United Kingdom	967	962	956	950	16.2	-0.6
EUROPE	5,826	6,134	6,580	6,610	11.3	-7.6
Belarus	40	56	56	0	0.0	-100.0
Moldova	1	1	1	1	0.1	0.0
Russian Federation	290	354	395	413	2.8	4.6
Canada	1,693	1,529	1,269	1,088	35.3	-14.2
United States	17,246	16,505	16,863	17,574	63.6	4.2
NORTH AMERICA	18,939	18,034	18,132	18,662	60.8	2.9

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 5

Fibreboard apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	80	109	80	95	11.6	18.5
Belgium-Luxembourg	610	387	321	394	37.2	22.8
Bulgaria	30	55	55	52	6.3	-5.4
Croatia	13	-9	10	13	3.0	27.7
Czech Republic	57	74	92	125	12.2	36.4
Denmark	111	147	307	355	67.3	15.8
Estonia	32	-113	42	41	29.2	-1.7
Finland	100	135	158	176	34.1	11.4
France	227	277	640	661	11.2	3.3
Germany	875	1,686	1,643	1,960	23.8	19.3
Hungary	33	38	24	29	2.9	21.5
Ireland	123	204	187	196	52.9	4.8
Israel	126	161	141	0	0.0	-100.0
Italy	733	424	1,304	1,182	20.6	-9.4
Latvia	1	8	10	16	6.6	58.3
Lithuania	13	25	37	30	8.1	-18.6
Netherlands	252	358	460	536	34.1	16.5
Norway	143	128	134	115	25.8	-14.3
Poland	423	609	692	730	18.8	5.4
Portugal	169	32	160	222	22.4	38.6
Romania	69	46	43	39	1.7	-9.4
Slovakia	47	51	183	88	16.3	-52.0
Slovenia	25	72	88	82	41.0	-7.0
Spain	506	643	1,226	1,307	33.0	6.6
Sweden	163	170	200	249	28.0	24.0
Switzerland	192	201	175	175	23.9	0.3
Turkey	344	616	455	422	6.4	-7.3
United Kingdom	919	1,114	1,288	1,140	19.4	-11.4
EUROPE	7,230	8,250	10,154	10,429	18.3	2.7
Russian Federation	432	639	590	645	4.4	9.2
Canada	615	523	574	558	18.1	-2.8
United States	6,472	6,529	7,584	7,903	28.6	4.2
NORTH AMERICA	7,087	7,051	8,158	8,461	27.6	3.7

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 6

Chemical woodpulp apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	1,275	1,348	1,420	1,355	165.7	-4.6
Belgium-Luxembourg	550	544	560	504	47.6	-10.1
Bulgaria	73	42	42	26	3.2	-37.5
Croatia	9	2	4	4	0.8	-0.2
Cyprus	4	3	3	3	3.3	-18.8
Czech Republic	283	330	367	368	35.9	0.4
Denmark	40	53	46	53	10.0	15.0
Estonia	10	38	42	50	35.4	19.9
Finland	4,310	4,996	5,215	5,261	1,018.7	0.9
France	3,264	3,466	3,398	3,600	61.1	5.9
Germany	3,730	4,053	3,994	3,846	46.8	-3.7
Greece	67	121	126	130	12.2	3.0
Hungary	133	144	170	188	18.7	10.5
Ireland	8	11	17	19	5.0	8.8
Israel	90	107	107	114	18.7	6.7
Italy	2,605	2,885	3,020	3,103	54.1	2.8
Lithuania	5	4	3	2	0.4	-53.5
Netherlands	620	725	831	897	57.0	8.0
Norway	569	646	537	538	121.1	0.1
Poland	799	826	891	897	23.1	0.6
Portugal	683	728	730	702	71.1	-3.9
Romania	191	176	157	136	6.1	-13.1
Slovakia	197	44	229	257	47.7	12.1
Slovenia	151	189	205	205	103.3	0.2
Spain	1,134	1,250	1,430	1,483	37.4	3.7
Sweden	4,657	4,994	4,979	5,028	565.4	1.0
Switzerland	458	444	430	451	61.4	4.9
Turkey	405	483	510	513	7.8	0.6
United Kingdom	1,580	1,633	1,529	1,560	26.6	2.0
EUROPE	27,904	30,323	31,031	31,292	54.9	0.8
Russian Federation	1,577	1,580	1,718	2,341	15.9	36.3
Canada	4,630	4,105	4,079	4,240	137.4	4.0
United States	48,391	50,076	49,952	49,621	179.6	-0.7
NORTH AMERICA	53,021	54,181	54,031	53,861	175.4	-0.3

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 7

Paper and paperboard apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	1,298	2,032	1,985	2,136	261.2	7.6
Belgium-Luxembourg	1,951	2,338	2,736	2,858	270.1	4.4
Bulgaria	178	201	201	212	25.6	5.1
Croatia	386	469	479	484	108.1	1.1
Czech Republic	683	761	782	803	78.2	2.7
Denmark	1,196	1,305	1,311	1,315	249.0	0.3
Estonia	51	54	49	51	36.0	4.8
Finland	2,276	2,220	2,027	2,044	395.8	0.9
France	9,130	9,772	10,743	10,844	184.2	0.9
Germany	15,346	16,148	17,073	17,642	214.7	3.3
Greece	1,067	878	1,053	1,058	99.5	0.4
Hungary	653	1,055	1,156	654	64.9	-43.5
Ireland	650	389	426	427	115.2	0.2
Israel	575	600	609	594	97.4	-2.5
Italy	8,187	9,590	9,592	10,236	178.5	6.7
Latvia	77	75	85	43	18.0	-49.3
Lithuania	85	86	95	83	22.5	-12.4
Netherlands	3,348	3,493	3,894	4,434	281.8	13.9
Norway	992	814	847	729	164.0	-14.0
Poland	1,692	1,992	2,088	2,250	58.1	7.8
Portugal	1,068	1,046	1,057	1,052	106.6	-0.5
Romania	390	336	346	318	14.2	-7.8
Slovakia	277	364	489	507	94.3	3.8
Slovenia	319	40	310	283	142.0	-8.9
Spain	5,407	5,661	6,021	6,377	160.9	5.9
Sweden	2,225	2,387	1,888	1,825	205.3	-3.3
Switzerland	1,481	1,528	1,590	1,736	236.4	9.2
The f.Y.R. of Macedonia	53	43	47	45	22.2	-5.1
Turkey	1,768	2,009	2,075	2,144	32.7	3.3
United Kingdom	11,374	11,906	11,413	11,871	202.1	4.0
EUROPE	73,463	79,211	82,470	85,322	149.6	3.5
Belarus	131	131	131	131	12.8	0.0
Russian Federation	2,212	2,353	2,128	2,751	18.7	29.3
Canada	6,733	6,515	6,722	7,961	258.0	18.4
United States	84,875	79,791	91,611	95,829	346.9	4.6
NORTH AMERICA	91,608	86,306	98,332	103,789	338.0	5.5

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 8

Graphic papers apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	776	902	767	857	104.8	11.7
Belgium-Luxembourg	811	1,063	1,281	1,482	140.1	15.7
Bulgaria	40	40	40	40	4.8	-0.4
Croatia	63	56	61	69	15.4	13.6
Czech Republic	336	354	348	341	33.2	-2.0
Denmark	588	677	686	657	124.4	-4.2
Finland	1,184	1,206	1,259	1,277	247.2	1.4
France	4,711	4,947	5,211	5,239	89.0	0.5
Germany	8,355	8,535	8,721	8,759	106.6	0.4
Greece	347	246	375	354	33.3	-5.8
Hungary	294	719	587	328	32.5	-44.1
Israel	260	260	261	261	42.8	0.0
Italy	3,376	3,709	3,539	3,976	69.3	12.4
Latvia	40	35	43	15	6.2	-65.4
Lithuania	27	33	37	40	10.9	8.7
Netherlands	1,461	1,695	1,858	2,178	138.4	17.2
Norway	567	398	462	454	102.2	-1.8
Poland	767	861	837	887	22.9	6.0
Portugal	393	393	449	465	47.1	3.7
Romania	184	145	128	87	3.9	-32.3
Slovakia	171	208	240	247	46.0	3.0
Slovenia	-25	-160	125	183	91.8	46.0
Spain	2,063	2,147	2,216	2,444	61.7	10.3
Sweden	965	979	694	750	84.3	8.0
Switzerland	795	868	931	964	131.3	3.5
The f.Y.R. of Macedonia	19	17	16	15	7.7	-2.4
Turkey	618	731	732	806	12.3	10.1
United Kingdom	5,789	6,208	6,497	6,788	115.5	4.5
EUROPE	35,012	37,271	38,400	39,974	70.1	4.1
Russian Federation	704	728	651	866	5.9	33.0
Canada	870	1,549	3,099	4,038	130.9	30.3
United States	36,326	38,345	39,078	40,442	146.4	3.5
NORTH AMERICA	37,196	39,894	42,177	44,480	144.8	5.5

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 9

Sanitary and household papers apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	103	109	113	109	13.3	-3.3
Belgium-Luxembourg	83	96	96	71	6.7	-26.4
Bulgaria	10	10	10	10	1.2	0.0
Croatia	151	206	211	207	46.3	-1.5
Czech Republic	23	57	32	37	3.6	15.6
Denmark	2	2	2	3	0.6	57.9
Finland	131	151	109	124	23.9	13.6
France	499	543	533	582	9.9	9.2
Germany	904	909	936	959	11.7	2.5
Greece	241	127	21	24	2.3	12.9
Hungary	46	46	47	48	4.7	0.8
Italy	330	766	813	876	15.3	7.8
Lithuania	0	7	11	8	2.0	-34.2
Netherlands	174	180	175	162	10.3	-7.8
Norway	56	45	14	14	3.0	-1.5
Poland	99	106	113	131	3.4	15.9
Portugal	61	59	64	64	6.5	0.6
Romania	35	35	39	34	1.5	-11.0
Slovakia	74	56	72	81	15.1	11.9
Slovenia	63	55	50	56	28.2	12.0
Spain	320	356	425	444	11.2	4.4
Sweden	234	233	236	208	23.4	-11.8
Switzerland	122	255	218	225	30.6	3.2
Turkey	50	58	73	84	1.3	15.1
United Kingdom	746	801	835	863	14.7	3.3
EUROPE	4,558	5,315	5,295	5,493	9.6	3.7
Russian Federation	147	187	101	101	0.7	0.0
Canada	562	535	547	574	18.6	4.9
United States	5,708	5,915	6,042	6,329	22.9	4.7
NORTH AMERICA	6,270	6,450	6,590	6,903	22.5	4.8

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 10

Packaging materials apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	869	930	991	1,052	128.6	6.1
Belgium-Luxembourg	1,427	1,268	1,179	1,187	112.2	0.7
Croatia	82	142	136	134	29.8	-2.1
Czech Republic	324	351	378	405	39.5	7.1
Denmark	543	562	549	570	107.9	3.8
Estonia	26	22	22	19	13.6	-11.4
Finland	673	620	567	514	99.6	-9.3
France	4,244	4,548	4,828	4,898	83.2	1.4
Germany	5,533	5,937	6,341	6,745	82.1	6.4
Greece	350	461	610	633	59.5	3.7
Hungary	255	247	249	253	25.1	1.7
Ireland	361	151	171	178	48.0	4.1
Israel	252	263	270	256	41.9	-5.3
Italy	4,149	4,770	4,865	4,976	86.8	2.3
Latvia	32	28	30	26	11.0	-13.8
Lithuania	33	32	41	33	8.8	-20.5
Netherlands	1,368	1,588	1,808	2,028	128.9	12.2
Norway	327	302	286	289	65.0	0.9
Poland	697	749	891	822	21.2	-7.7
Portugal	539	509	515	485	49.1	-5.7
Romania	159	141	171	171	7.6	-0.1
Slovakia	28	43	127	130	24.2	2.4
Slovenia	259	134	123	38	19.1	-69.1
Spain	2,619	2,835	2,311	2,368	59.8	2.5
Sweden	1,003	1,026	830	750	84.4	-9.6
Switzerland	507	490	516	475	64.7	-7.9
The f.Y.R. of Macedonia	23	17	21	29	14.6	41.9
Turkey	1,105	1,193	1,211	1,198	18.3	-1.1
United Kingdom	3,850	3,761	3,672	3,583	61.0	-2.4
EUROPE	31,636	33,162	33,751	34,308	60.2	1.7
Russian Federation	305	541	964	1,150	7.8	19.3
Canada	3,086	3,131	3,284	3,478	112.7	5.9
United States	34,210	36,463	38,715	40,967	148.3	5.8
NORTH AMERICA	37,296	39,593	41,999	44,446	144.7	5.8

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 11

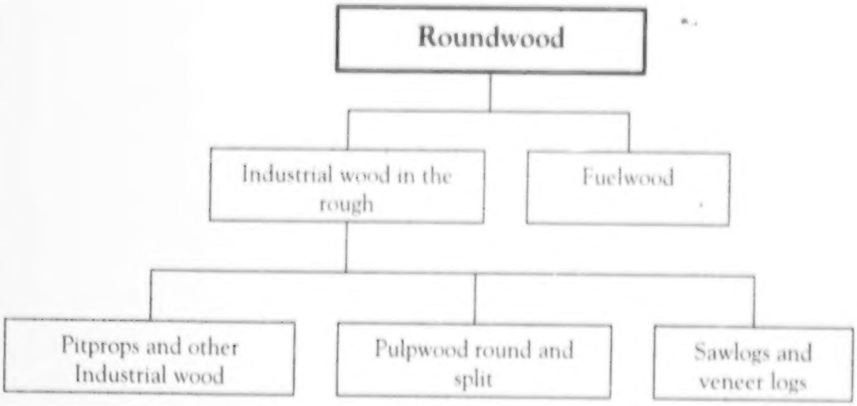
Other paper and paperboard apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	46	111	115	118	14.5	3.1
Belgium-Luxembourg	71	97	181	179	16.9	-1.4
Croatia	91	65	71	74	16.5	4.0
Czech Republic	1	-1	24	20	1.9	-16.7
Denmark	63	64	74	85	16.1	14.9
Finland	410	446	92	129	25.0	41.1
France	238	236	213	197	3.3	-7.3
Germany	986	1,073	1,075	1,129	13.7	5.0
Greece	128	44	46	47	4.5	2.7
Hungary	58	43	274	26	2.5	-90.6
Italy	332	345	376	409	7.1	8.7
Latvia	10	14	13	6	2.5	-54.4
Lithuania	26	14	5	3	0.7	-50.6
Netherlands	-24	-15	52	67	4.2	27.8
Norway	42	69	85	-28	-6.3	-132.7
Poland	283	321	248	410	10.6	65.7
Portugal	74	85	30	37	3.8	24.1
Romania	13	15	7	26	1.2	264.8
Slovakia	3	58	49	48	9.0	-0.1
Slovenia	22	11	12	6	3.0	-50.0
Spain	405	323	417	492	12.4	17.9
Sweden	23	149	128	117	13.2	-8.6
Switzerland	57	-85	-75	72	9.8	-196.0
The f.Y.R. of Macedonia	8	8	0	-3	-1.6	-1350.4
Turkey	31	12	59	56	0.9	-5.1
United Kingdom	516	489	409	638	10.9	56.1
EUROPE	3,997	4,082	4,072	4,482	7.9	10.1
Russian Federation	526	577	412	634	4.3	53.9
United States	43,380	35,607	7,775	8,090	29.3	4.1
NORTH AMERICA	43,318	35,625	7,567	7,960	25.9	5.2

Source: ECE/FAO TIMBER database, 2000.

COMPONENTS OF FOREST PRODUCT GROUPS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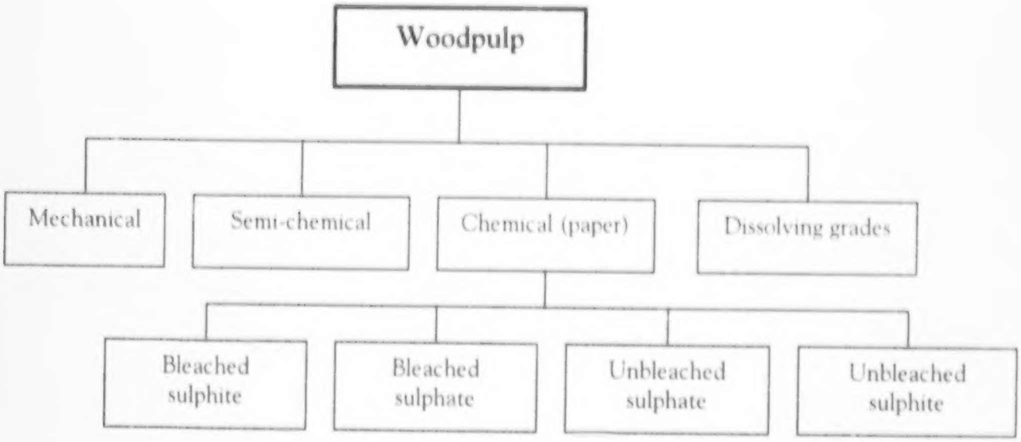
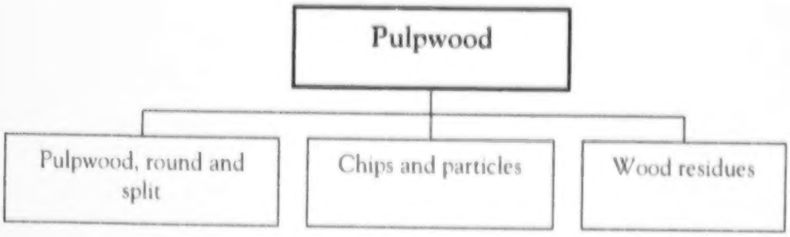
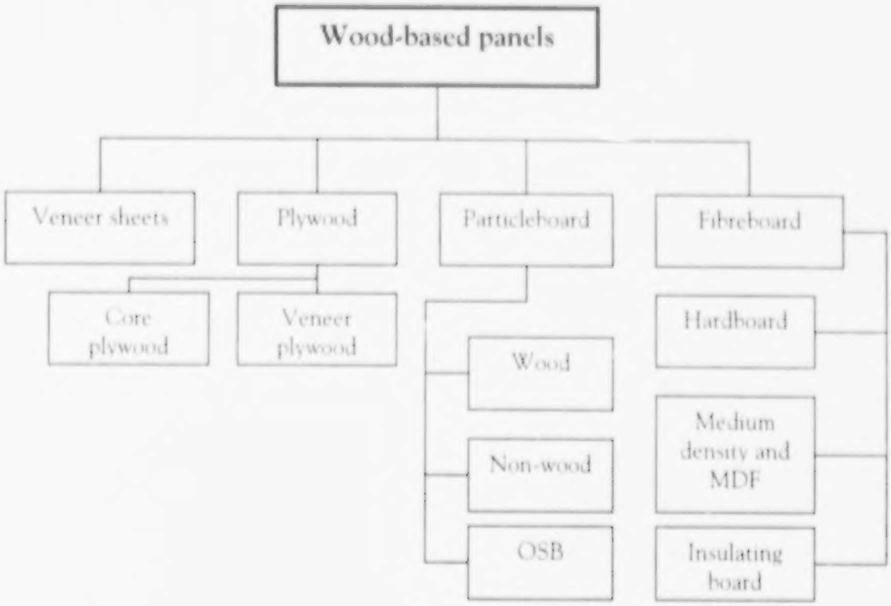
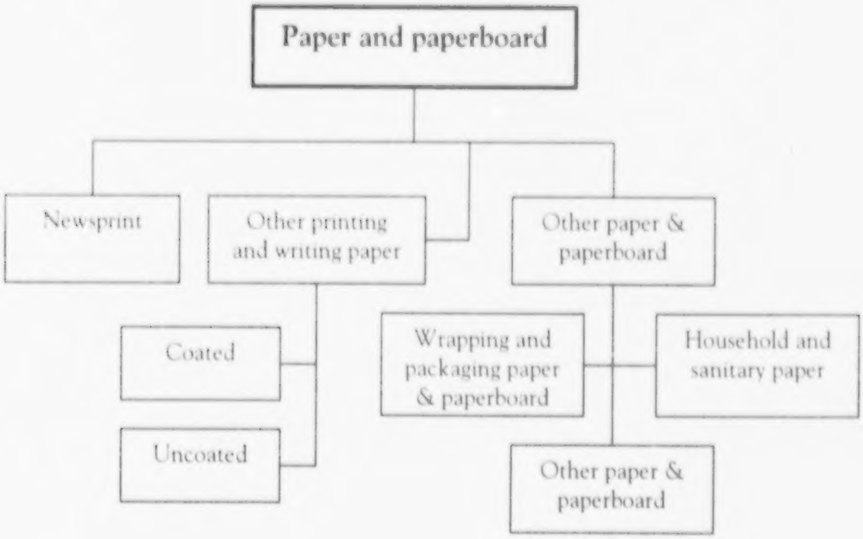
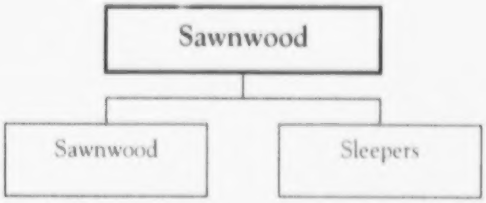
Industrial wood in the rough
Fuelwood
Pitprops and other Industrial wood
Pulpwood round and split
Sawlogs and veneer logs


Woodpulp
Mechanical
Semi-chemical
Chemical (paper)
Dissolving grades
Bleached sulphite
Bleached sulphate
Unbleached sulphate
Unbleached sulphite


Pulpwood
Pulpwood, round and split
Chips and particles
Wood residues


Wood-based panels
Veneer sheets
Plywood
Particleboard
Fibreboard
Core plywood
Veneer plywood
Wood
Non-wood
OSB
Hardboard
Medium density and MDF
Insulating board


Paper and paperboard
Newsprint
Other printing and writing paper
Other paper & paperboard
Coated
Uncoated
Wrapping and packaging paper & paperboard
Household and sanitary paper
Other paper & paperboard


Sawnwood
Sawnwood
Sleepers

FOREST PRODUCTS TERMINOLOGY

GENERAL TERMS

Coniferous (softwood)

All woods derived from trees classified botanically as Gymnospermae, e.g. *Abies* spp., *Araucaria* spp., *Cedrus* spp., *Chamaecyparis* spp., *Cupressus* spp., *Larix* spp., *Picea* spp., *Pinus* spp., *Thuja* spp., *Tsuga* spp., etc. These are generally referred to as softwoods.

Non-coniferous (hardwood)

All woods derived from trees classified botanically as Angiospermae, e.g. *Acer* spp., *Dipterocarpus* spp., *Entandropthagma* spp., *Eucalyptus* spp., *Fagus* spp., *Populus* spp., *Quercus* spp., *Shorea* spp., *Swietonia* spp., *Tectona* spp., etc. These are generally referred to as broadleaves or hardwoods.

Tropical

Tropical timber is defined in the International Tropical Timber Agreement (1994) as follows "Non-coniferous tropical wood for industrial uses, which grows or is produced in the countries situated between the Tropic of Cancer and the Tropic of Capricorn. The term covers logs, sawnwood, veneer sheets and plywood. Plywood which includes in some measure conifers of tropical origin shall also be covered by the definition." For the purposes of this questionnaire, tropical sawnwood, veneer sheets and plywood shall also include products produced in non-tropical countries from imported tropical roundwood. Please indicate if statistics provided under "tropical" in this questionnaire may include species or products beyond the scope of this definition.

TRANSACTIONS

Removals

The volume of all trees, living or dead, that are felled and removed from the forest, other wooded land or other felling sites. It includes natural losses that are recovered (i.e. harvested), removals during the year of wood felled during an earlier period removals of non-stem wood such as stumps and branches (where these are harvested) and removal of trees killed or damaged by natural causes (i.e. natural losses), e.g. fire, windblown, insects and diseases. It excludes bark and other non-woody biomass and any wood that is not removed, e.g. stumps, branches and tree tops (where these are not harvested) and felling residues (harvesting waste). It is reported in cubic metres solid volume underbark (i.e. excluding bark). Where it is measured overbark (i.e. including bark), the volume has to be adjusted downwards to convert to an underbark estimate.

Production

The solid volume or weight of all production of the products specified below. It includes the production of products that may immediately be consumed in the production of another product (e.g. wood pulp, which may immediately be converted into paper as part of a continuous process). It excludes the production of veneer sheets that are used for plywood production within the same country. It is reported in cubic metres of solid volume in the case of roundwood, sawnwood and wood based panels and metric tonnes in the case of charcoal, pulp and paper products.

Imports (Quantity, Value)

Products imported for domestic consumption or processing shipped into a country. It includes imports for re-export. It excludes "In-transit" shipments. it is reported in cubic metres of solid volume or metric tonnes and values normally include cost, insurance and freight (i.e. CIF).

Exports (Quantity, Value)

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[1] From ECE/FAO/EUROSTAT/ITTO Joint Forest Sector Questionnaire and APA-The Engineered Wood Association

Products of domestic origin or manufacture shipped out of the country. It includes re-exports. It excludes "in-transit" shipments. It is reported in cubic metres of solid volume or metric tonnes and values are normally recorded as free-on-board (i.e. FOB).

PRIMARY PRODUCTS

The names of individual forest products and product aggregates are listed below in the order in which they occur in the tables later on. Separate definitions are not provided for coniferous (C) and non-coniferous (NC) components where the general definition given above applies. Unless indicated otherwise, each forest product category includes both coniferous and non-coniferous components.

Roundwood

All roundwood felled or otherwise harvested and removed. It comprises all wood obtained from removals, i.e. the quantities removed from forests and from trees outside the forest, including wood recovered from natural, felling and logging losses during the period, calendar year or forest year. It includes all wood removed with or without bark, including wood removed in its round form, or split, roughly squared or in other form (e.g. branches, roots, stumps and burls (where these are harvested) and wood that is roughly shaped or pointed. It is an aggregate comprising wood fuel, including wood for charcoal and industrial roundwood (wood in the rough). It is reported in cubic metres solid volume underbark (i.e. excluding bark).

Wood Fuel (Including Wood For Charcoal)

Roundwood that will be used as fuel for purposes such as cooking, heating or power production. It includes wood harvested from main stems, branches and other parts of trees (where these are harvested for fuel) and wood that will be used for charcoal production (e.g. in pit kilns and portable ovens). The volume of roundwood used in charcoal production is estimated by using a factor of 6.0 to convert from the weight (mt) of charcoal produced to the solid volume (m3) of roundwood used in production. It also includes wood chips to be used for fuel that are made directly (i.e. in the forest) from roundwood. It excludes wood charcoal. It is reported in cubic metres solid volume underbark (i.e. excluding bark).

Industrial Roundwood (Wood In The Rough)

All roundwood except wood fuel. In JQ1, it is an aggregate comprising sawlogs and veneer logs; pulpwood, round and split; and other industrial roundwood. It is reported in cubic metres solid volume underbark (i.e. excluding bark). The customs classification systems used by most countries do not allow the division of Industrial Roundwood *trade* statistics into the different end-use categories that have long been recognized in *production* statistics (i.e. saw and veneer logs, pulpwood and other industrial roundwood). Thus, these components do not appear in JQ2. Category 1.2.NCT does not appear in JQ1 as only minimal quantities of tropical industrial roundwood are removed from countries classified as non-tropical (i.e. Australia, China) and all non-coniferous removals in tropical countries fall into this category by definition. Note also that telephone poles (HS code 4403 10) are not separated into coniferous and non-coniferous components in international customs classification systems; please attempt to ascertain the breakdown of any pole trade by examining the product source.

Sawlogs and veneer logs

Roundwood that will be sawn (or chipped) lengthways for the manufacture of sawnwood or railway sleepers (ties) or used for the production of veneer (mainly by peeling or slicing). It includes roundwood (whether or not it is roughly squared) that will be used for these purposes; shingle bolts and stave bolts; match billets and other special types of roundwood (e.g. burls and roots, etc.) used for veneer production. It is reported in cubic metres solid volume underbark (i.e. excluding bark).

Pulpwood, round and split

Roundwood that will be used for the production of pulp, particleboard or fibreboard. It includes: roundwood (with or without bark) that will be used for these purposes in its round form or as splitwood or wood chips made directly (i.e. in the forest) from roundwood. It is reported in cubic metres solid volume underbark (i.e. excluding bark).

Other industrial roundwood

Industrial roundwood (wood in the rough) other than sawlogs, veneer logs and/or pulpwood. It includes roundwood that will be used for poles, piling, posts, fencing, pitprops tanning, distillation and match blocks, etc. It is reported in cubic metres solid volume underbark (i.e. excluding bark).

Wood charcoal

Wood carbonised by partial combustion or the application of heat from external sources. It includes charcoal used as a fuel or for other uses, e.g. as a reduction agent in metallurgy or as an absorption or filtration medium. It is reported in metric tonnes.

Chips and particles

Wood that has been deliberately reduced to small pieces during the manufacture of other wood products and is suitable for pulping, for particle board and fibreboard production, for use as a fuel, or for other purposes. It excludes wood chips made directly (i.e. in the forest) from roundwood (i.e. already counted as pulpwood, round and split). It is reported in cubic metres solid volume excluding bark.

Wood residues

The volume of roundwood that is left over after the production of forest products in the forest processing industry (i.e. forest processing residues) and that has not been reduced to chips or particles. It includes sawmill rejects, slabs, edgings and trimmings, veneer log cores, veneer rejects, sawdust, residues from carpentry and joinery production, etc. It excludes wood chips made either directly (i.e. in the forest) from roundwood or made from residues (i.e. already counted as pulpwood, round and split or wood chips and particles). It is reported in cubic metres solid volume excluding bark.

Sawnwood

Wood that has been produced from both domestic and imported roundwood, either by sawing lengthways or by a profile-chipping process and that, with a few exceptions, exceeds 5 mm in thickness. It includes planks, beams, joists, boards, rafters, scantlings, laths, boxboards, sleepers and "lumber", etc., in the following forms: unplaned, planed, finger-jointed, etc. It excludes wooden flooring, mouldings (sawnwood continuously shaped along any of its edges or faces, like tongued, grooved, rebated, V-jointed, beaded, moulded, rounded or the like) and sawnwood produced by resawing previously sawn pieces. It is reported in cubic metres solid volume. Note that sleepers (HS code 4406) are not separated into coniferous and non-coniferous components in international customs classification systems; please attempt to ascertain the breakdown of any sleeper trade by examining the product source.

Wood-based panels

In JQ1 and JQ2, this product category is an aggregate comprising veneer sheets, plywood, particle board, and fibreboard. It is reported in cubic metres solid volume.

Veneer sheets

Thin sheets of wood of uniform thickness, rotary cut (i.e. peeled), sliced or sawn. It includes wood used for the manufacture of laminated construction material, furniture, veneer containers, etc. It excludes wood used for plywood production within the same country. It is reported in cubic metres solid volume.

Plywood

A panel consisting of an assembly of veneer sheets bonded together with the direction of the grain in alternate plies generally at right angles. The veneer sheets are usually placed symmetrically on both sides of a central ply or core that may itself be made from a veneer sheet or another material. It includes *veneer plywood* (plywood manufactured by bonding together more than two veneer sheets, where the grain of alternate veneer sheets is crossed, generally at right angles); *core plywood* or *blockboard* (plywood with a solid core (i.e. the central layer, generally thicker than the other plies) that consists of narrow boards, blocks or strips of wood placed side by side, which may or may not be glued together); *cellular board* (plywood with a core of cellular construction); and *composite plywood* (plywood with the core or certain layers made of material other than solid wood or veneers). It excludes laminated construction materials (e.g. glulam), where the grain of the veneer sheets generally runs in the same direction. It is reported in cubic metres solid volume. Non-coniferous (tropical) plywood is defined as having at least one face sheet of non-coniferous (tropical) wood. If substantial quantities of mixed (coniferous/non-coniferous) plywood are included in reported statistics, an explanatory note should be provided.

Particle board (including oriented strandboard (OSB))

A panel manufactured from small pieces of wood or other ligno-cellulosic materials (e.g. chips, flakes, splinters, strands, shreds, shives, etc.) bonded together by the use of an organic binder together with one or more of the following agents: heat, pressure, humidity, a catalyst, etc. The particle board category is an aggregate category. It includes particle board; oriented strandboard (OSB) and flaxboard. It excludes wood wool and other particle boards bonded together with inorganic binders. It is reported in cubic metres solid volume.

Oriented strandboard (OSB)

A structural board in which layers of narrow wafers are layered alternately at right angles in order to give the board greater elastomechanical properties. The wafers, which resemble small pieces of veneer, are coated with e.g. waterproof phenolic resin glue, interleaved together in mats and then bonded together under heat and pressure. The resulting product is a solid, uniform building panel having high strength and water resistance. It includes: waferboard and oriented strandboard (OSB). It is reported in cubic metres solid volume.

Fibreboard

A panel manufactured from fibres of wood or other ligno-cellulosic materials with the primary bond deriving from the felting of the fibres and their inherent adhesive properties (although bonding materials and/or additives may be added in the manufacturing process). It includes fibreboard panels that are flat-pressed and moulded fibreboard products. In JQ1 and JQ2, it is an aggregate comprising hardboard; medium density fibreboard (MDF); and insulating board. It is reported in cubic metres solid volume.

Hardboard

Fibreboard of a density exceeding 0.8 g/cm3 It excludes similar products made from pieces of wood, wood flour or other ligno-cellulosic material where additional binders are required to make the panel; and panels made of gypsum or other mineral material. It is reported in cubic metres solid volume.

Medium density fibreboard (MDF)

Fibreboard of a density exceeding 0.5 g/cm3 but not exceeding 0.8 g/cm3 It is reported in cubic metres solid volume.

Insulating board

Fibreboard of a density not exceeding 0.5 g/cm^3. It is reported in cubic metres solid volume.

Wood pulp

Fibrous material prepared from pulpwood, wood chips, particles or residues by mechanical and/or chemical process for further manufacture into paper, paperboard, fibreboard or other cellulose products. In JQ1 and JQ2, it is an aggregate comprising mechanical wood pulp; semi-chemical wood pulp; chemical wood pulp; and dissolving wood pulp. It is reported in metric tonnes air-dry weight (i.e. with a 10% moisture content).

Mechanical wood pulp

Wood pulp obtained by grinding or milling pulpwood or residues into fibres, or through refining chips or particles. Also called groundwood pulp and refiner pulp, it may be bleached or unbleached. It includes chemi-mechanical and thermo-mechanical pulp. It excludes exploded and defibrillated pulp. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Semi-chemical wood pulp

Wood pulp obtained by subjecting pulpwood, wood chips, particles or residues to a series of mechanical and chemical treatments, none of which alone is sufficient to make the fibres separate readily. It may be bleached or unbleached. It includes semi-chemical wood pulp; chemi-groundwood pulp; and chemi-mechanical wood pulp etc. (named in the order and importance of the treatment during the manufacturing process). It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Chemical wood pulp

Wood pulp obtained by subjecting pulpwood, wood chips, particles or residues to a series of chemical treatments. It includes sulphate (kraft) wood pulp; soda wood pulp and sulphite wood pulp. It may be bleached, semi-bleached or unbleached. It excludes dissolving grades of wood pulp. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content). If available, statistics for the following four component pulps are also requested: unbleached sulphite pulp; bleached sulphite pulp; unbleached sulphate pulp; and bleached sulphate pulp.

Sulphate unbleached pulp
Sulphate bleached pulp

Wood pulp obtained by mechanically reducing pulpwood, wood chips, particles or residues to small pieces that are subsequently cooked in a pressure vessel in the presence of sodium hydroxide cooking liquor (soda pulp) or a mixture of sodium hydroxide and sodium sulphite cooking liquor (sulphate pulp). It excludes dissolving grades of wood pulp. It is reported in metric tonnes air-dry weight (i.e. with a 10% moisture content). Data for two classes (bleached, including semi-bleached, and unbleached) are requested separately.

Sulphite unbleached pulp
Sulphite bleached pulp

Wood pulp obtained by mechanically reducing pulpwood, wood chips, particles or residues to small pieces that are subsequently cooked in a pressure vessel in the presence of a bisulphite cooking liquor. Bisulphites such as ammonium, calcium, magnesium and sodium are commonly used in this process. It excludes dissolving grades of wood pulp. It is reported in metric tonnes air-dry weight (i.e. with a 10% moisture content). Data for two classes (bleached, including semi-bleached, and unbleached) are requested separately.

Dissolving grades

Chemical pulp (sulphate, soda or sulphite) made from wood of special quality, with a very high alpha-cellulose content (usually 90 percent and over). This type of pulp is always bleached and is readily adaptable for uses other than papermaking. It is used principally as a source of cellulose in the manufacture of products such as synthetic fibres, cellulose plastic materials, lacquers and explosives. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Other pulps

Pulp manufactured from waste paper or from fibrous vegetable materials other than wood and used for the manufacture of paper, paperboard and fibreboard. In JQ1 and JQ2, it is an aggregate comprising pulp from fibres other than wood and recovered fibre pulp. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Pulp from fibres other than wood

Pulp manufactured from fibrous vegetable materials other than wood and used for the manufacture of paper, paperboard and fibreboard. It excludes pulp made from recovered paper. It includes pulps made from: straw; bamboo; bagasse; esparto; other reeds or grasses; cotton fibres; flax; hemp; rags; and other textile wastes. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Recovered fibre pulp

Pulp manufactured from recovered paper or paperboard and used for the manufacture of paper, paperboard and fibreboard. It excludes pulp made from straw; bamboo; bagasse; esparto; other reeds or grasses; cotton fibres; flax; hemp; rags; and other textile wastes. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Recovered paper

Waste and scraps of paper or paperboard that have been collected for re-use as a raw material for the manufacture of paper and paperboard. It includes paper and paperboard that has been used for its original purpose and residues from paper and paperboard production. It is reported in metric tonnes.

Paper and paperboard

The paper and paperboard category is an aggregate category. In the production and trade statistics, it represents the sum of: graphic papers; sanitary and household papers; packaging materials and other paper and paperboard. Products in this category are generally manufactured in strips or rolls of a width exceeding 15 cm (36 cm for HS 48.13 and 48.19) or in rectangular sheets with one side exceeding 36 cm and the other exceeding 15 cm in the unfolded state. It excludes manufactured paper products such as boxes, cartons, books and magazines, etc. It is reported in metric tonnes.

Graphic papers

The paper and paperboard category is an aggregate category. In the production and trade statistics, it represents the sum of: newsprint; uncoated mechanical; uncoated woodfree and coated papers. Products in this category are generally manufactured in strips or rolls of a width exceeding 15 cm (36 cm for HS 48.13 and 48.19) or in rectangular sheets with one side exceeding 36 cm and the other exceeding 15 cm in the unfolded state. It excludes manufactured paper products such as books and magazines, etc. It is reported in metric tonnes.

Newsprint

Paper mainly used for printing newspapers. It is made largely from mechanical pulp and/or waste paper, with or without a small amount of filler. Weights usually range from 40 to 52g/m2 but can be as high as 65g/m2. Newsprint is machine finished or slightly calendered, white or slightly coloured and is used in reels for letterpress, offset or flexo printing. It is reported in metric tonnes.

Uncoated mechanical

Paper suitable for printing or other graphic purposes where less than 90% of the fibre furnish consists of chemical pulp fibres. This grade is also known as groundwood or wood-containing paper and magazine paper, such as heavily filled supercalendered paper for consumer magazines printed by the rotogravure and offset methods. Excluded: Wallpaper base. It is reported in metric tonnes.

Uncoated woodfree

Paper suitable for printing or other graphic purposes, where at least 90% of the fibre furnish consists of chemical pulp fibres. Uncoated woodfree paper can be made from a variety or furnishes, with variable levels of mineral filler and a range of finishing processes such as sizing, calendering, machine glazing and watermarking. This grade includes most office papers, such as business forms, copier, computer, stationery and book papers. Pigmented and size press "coated" papers (coating less than 5g per side) are covered by this heading. Excluded: Wallpaper base. It is reported in metric tonnes.

Coated papers

All paper suitable for printing or other graphic purposes and coated on one or both sides with carbon or minerals such as china clay (kaolin), calcium carbonate, etc. Coating may be by a variety of methods, both on-machine and off-machine, and may be supplemented by supercalendering. Included: Raw carbon and self-copy paper in rolls or sheets. Excluded: Other copying and transfer papers. It is reported in metric tonnes.

Sanitary and household papers

This covers the stock of a wide range of tissue and other hygienic papers for use in households or commercial and industrial premises. Examples are toilet paper and facial tissues, kitchen towels, hand towels and industrial wipes. Some tissue is also used in the manufacture of babies napkins, sanitary towels, etc. The parent reel stock is made from virgin pulp or recovered fibre or mixtures of these. Final products cut to size or in rolls not exceeding 36cm are excluded here. It is reported in metric tonnes.

Packaging materials

Paper or paperboard mainly used for wrapping and packaging purposes. Excluded: Unbleached kraft paper and paperboard that are no Sack kraft paper or Kraftliner and weighing more than 150 g/m² but less than 225 g/m²; felt paper and paperboard; Tracing papers; not further processed uncoated paper weighing 225 g/m² or more. It is reported in metric tonnes.

Case materials

Papers and boards mainly used in the manufacture of corrugated board. They are made from any combination of virgin and recovered fibres and can be bleached, unbleached or mottled. Included are kraftliner, testliner, semi-chemical fluting, and waste-based fluting (Wellenstoff). It is reported in metric tonnes.

Folding boxboard

Often referred to as Cartonboard, it may be single or multiply, coated or uncoated. It is made from virgin and/or recovered fibres, and has good folding properties, stiffness and scoring ability. It is mainly used in cartons for consumer products such as frozen food and for liquid containers.Included: paper and paperboard covered or coated with plastics (excluding adhesives); coated Multi-ply not uniformly bleached throughout the mass. It is reported in metric tonnes.

Wrapping papers

Wrappings (up to 150 g/m2): Papers whose main use is wrapping or packaging made from any combination of virgin or recovered fibres, bleached or unbleached. They may be subject to various finishing and/or marking processes. Included are sack kraft, other wrapping krafts, sulphite and greaseproof papers as well as coated paper and paperboard not uniformly bleached throughout the mass, except Multi-ply. Excluded: Tracing papers. It is reported in metric tonnes.

Other papers mainly for packaging

This category embraces all papers and boards mainly for packaging purposes other than those listed above. Most are produced from recovered fibres, e.g. greyboards, and go for conversion, which in some cases may be for end-uses other than packaging. Included: Composite, not coated, paper and paper board of flat layers stuck together. It is reported in metric tonnes.

Other paper and paperboard

Other papers and boards for industrial and special purposes. This category includes cigarette papers and stock of filter papers, as well as gypsum liners and special papers for waxing, insulating, roofing, asphalting, and other specific applications or treatments. Excluded: All composite, not coated, paper and paper board of flat layers stuck together; coated paper and paperboard not uniformly bleached throughout the mass; paper and paperboard covered or coated with plastics (excluding adhesives). Included: wallpaper base; Unbleached kraft paper and paperboard that are no Sack kraft paper or Kraftliner and weighing more than 150 g/m² but less than 225 g/m²; felt paper and paperboard; Tracing papers; not further processed uncoated paper weighing 225 g/m² or more. Raw copying and transfer papers, in rolls or sheets except carbon or self-copy paper. It is reported in metric tonnes.

SECONDARY PROCESSED WOOD PRODUCTS

Further processed sawnwood

Wood sawn or chipped lengthwise (including strips and friezes for parquet flooring, not assembled) and continuously shaped (tongued, grooved, rebated, V-jointed, beaded, moulded, rounded or the like) along any of its edges or faces, whether or not planed, sanded or finger jointed. Excludes: sawn or chipped wood with further treatment of edges and/or faces other than planing, or sanding.

Wooden packaging material

Packing cases, boxes, crates, drums and similar packings, of wood; cable-drums of wood; pallets, box pallets and other load boards, of wood; pallet collars of wood. Casks, barrels, vats, tubs and other coopers' products and parts thereof, of wood, including staves.

Builder's joinery and carpentry of wood

Including windows and doors and coverings thereof as well as cellular wood panels, assembled parquet panels, shingles and shakes.

Wooden furniture

Seats with wooden frames as wooden camping and garden seats etc. and parts thereof. Except: seats convertible into beds, swivel seats, medical seats. Wooden furniture other than seats as of a kind used in offices, in the kitchen, bedrooms and elsewhere, as well as parts of all these.

Prefabricated buildings predominantly made of wood

E.g.: Log cabins, houses predominantly prefabricated from wood-based panels.

Secondary paper products

This group excludes paper in reels and sheets not cut to size included in JQ2. It is an aggregation of all paper products ready for use.

Composite paper and paperboard

Composite paper and paperboard (made by sticking flat layers of paper or paperboard together with an adhesive), not surface-coated or impregnated, whether or not internally reinforced, in rolls or sheets

Special coated paper and pulp products

Paper, paperboard, cellulose wadding and webs of cellulose fibres, coated, impregnated, covered, surface-coloured, surface-decorated or printed, in rolls or sheets. Excluded: Composite paper and paperboard (made by sticking flat layers of paper or paperboard together with an adhesive), not surface-coated or impregnated, but possibly laminated internally with bitumen, tar or asphalt, in rolls or sheets.

Carbon paper and copying paper, ready for use

Carbon paper, self-copy paper and other copying or transfer, duplicator stencils and offset plates, of paper, whether or not put up in boxes. Excluded: Raw carbon, self-copy and other copying or transfer papers in paper in rolls or sheets.

Household and sanitary paper

Products ready for use: toilet paper and similar paper, cellulose wadding or webs of cellulose fibres, of a kind used for household or sanitary purposes, in rolls of a width not exceeding 36 cm, or cut to size or shape; included: e. g. handkerchiefs, cleansing tissues, towels, tablecloths, serviettes, napkins for babies, tampons, bed sheets and similar household, sanitary or hospital articles, articles of apparel and clothing accessories, of paper pulp, paper, cellulose wadding or webs of cellulose fibres. excluded: sanitary paper produced stock.

Packaging cartons, boxes etc.

Cartons, boxes, cases, bags and other packing containers, of paper, paperboard, cellulose wadding or webs of cellulose fibres; box files, letter trays, and similar articles, of paper or paperboard of a kind used in offices, shops or the like.

Other articles of paper and paperboard, ready for use

Products ready for use: e.g.wallpaper and similar wall coverings; window transparencies of paper; floor coverings on a base of paper or of paperboard, whether or not cut to size; all office material like for correspondence, document storage as well as albums, labels of all kinds, bobbins, spools, cops and similar supports of paper pulp, paper or paperboard (whether or not perforated or hardened); all other paper, paperboard, cellulose wadding and webs of cellulose fibres, cut to size or shape; other articles of paper pulp, paper, paperboard, cellulose wadding or webs of cellulose fibres.

Printing and writing paper, ready for use

For example: strips or rolls for office machines, continuous forms

Articles, moulded or pressed from pulp

For example: packaging for eggs

Filter paper and paperboard, ready for use

Printed articles

Printed books

Printed books, brochures, leaflets and similar printed matter, whether or not in single sheets

Newspapers

Newspapers, journals and periodicals, whether or not illustrated or containing advertising material

Other printed articles

Children's picture, drawing or colouring books; music, printed or in manuscript, whether or not bound or illustrated; maps and hydrographic or similar charts of all kinds, including atlases, wall maps, topographical plans and globes, printed; plans and drawings for architectural, engineering, industrial, commercial, topographical or similar purposes, being originals drawn by hand; hand-written texts; photographic reproductions on sensitised paper and carbon copies of the foregoing; unused postage, revenue or similar stamps of current or new issue in the country to which they are destined; stamp-impressed paper; banknotes; cheque forms; stock, share or bond certificates and similar documents of title; transfers (decalcomania); printed or illustrated postcards; printed cards bearing personal greetings, messages or announcements, whether or not illustrated, with or without envelopes or trimmings; calendars of any kind, printed, including calendar blocks; other printed matter, including printed pictures and photographs.

ENGINEERED WOOD PRODUCTS

These definitions come from the APA-The Engineered Wood Association. APA classifies glued engineered wood products into three general groups: 1) glued laminated timber (glulam), 2) structural composite lumber (SCL) consisting primarily of laminated veneer lumber (LVL), but also parallel strand lumber and oriented strand lumber, and 3) wood I-beams.

Glued laminated timber (glulam)

Glulam is an engineered stress-rated product created by adhesively bonding together individual pieces of lumber having a thickness of 50 mm (2 in.) or less. It's one of the most versatile of the engineered wood products. It can be easily shaped into forms ranging from straight beams to complex curved members and is used for a wide variety of structural applications in both residential and nonresidential construction. Glulam is used typically for headers, girders, purlins, beams, arches, and in exposed applications such as bridges, marinas and transmission structures.

Structural composite lumber

Laminated Veneer Lumber (LVL)

LVL is the most widely used of the structural composite lumber products. It is produced by adhesively bonding thin wood veneers together in a large billet so that the grain of all veneers is parallel to the long direction. The LVL billet is then sawn to desired dimensions depending on the construction application. Some of the many uses are in header and beam applications, hip and valley rafters, as scaffold planking and as flange material for wood I-beams.

Parallel Strand Lumber (PSL)

PSL consists of long veneer strands laid in parallel formation and bonded together with an adhesive to form beams. Like LVL and glulam, this product is used for beam and header applications where high bending strength is needed.

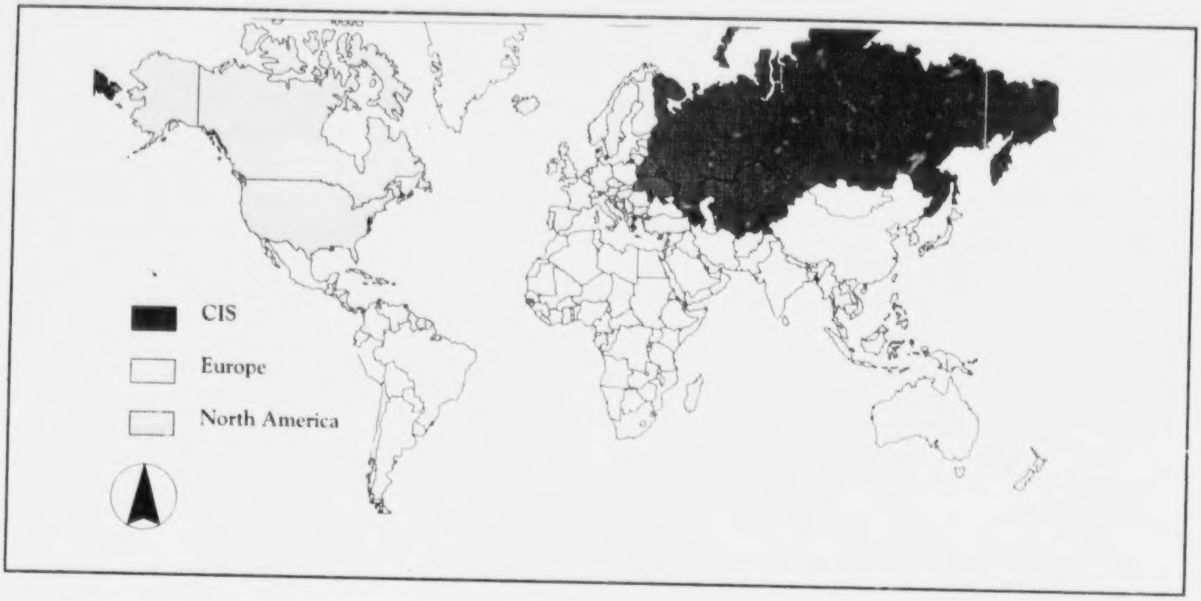
Oriented Strand Lumber (OSL)

Similar to PSL, oriented strand lumber is made from flaked wood strands that have a high length-to-thickness ratio. Combined with an adhesive, the strands are oriented and formed into a large mat or billet and pressed. OSL is used in a variety of applications from studs to millwork components.

Wood I-beams

Wood I-beams are structural, load-carrying products designed mostly for floor joist applications. The beams offer long length and low material weight. Their "I" configuration provides high strength and stiffness. The flange material for I-beams is typically dimension lumber or LVL; the web material is typically oriented strand board (OSB) or plywood. Wood I-beams, used extensively in residential construction, continue to be the fastest growing of the glued engineered wood products.

COUNTRIES IN THE ECE REGION



EUROPE

Albania
Andorra
Austria
Belgium
Bosnia-Herzegovina
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Latvia
Liechtenstein
Lithuania
Luxembourg
Malta
Monaco
Netherlands
Norway
Poland
Portugal
Romania
San Marino
Slovak Republic
Slovenia
Spain
Sweden
Switzerland
The former Yugoslav Republic of Macedonia
Turkey
United Kingdom
Yugoslavia

COMMONWEALTH OF INDEPENDENT STATES (CIS)

Armenia
Azerbaijan
Belarus
Georgia
Kazakhstan
Kyrgyzstan
Republic of Moldova
Russian Federation
Tajikistan
Turkmenistan
Ukraine
Uzbekistan

NORTH AMERICA

Canada
United States of America

SOURCES OF INFORMATION USED IN *FOREST PRODUCTS ANNUAL MARKET REVIEW*

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Arborescences, France, (http://www.onf.fr)

Asian Timber, Singapore, (e-mail: schieffer@firstasia.co.sg)

Baltic Timber Journal, Latvia, (e-mail: balti@parks.lv)

Bureau of Labor Statistics, USA, (http://stats.bls.gov)

Canadian Sustainable Forestry Certification Coalition, (http://www.sfms.com)

Centre d'Etudes de l'Economie du Bois, France, (Fax: +33-1-56 69 52 09)

Chilean Forestry News, (http://www.conaf.cl)

Council of Forest Industries, Canada, (http://www.cofi.org)

CSA International, Canadian Standards Association, (http://www.csa.ca)

Eastern Quotes & Comments, USA, (http://www.rctc.com/irland/)

ECE/FAO TIMBER database, (http://www.unece.org/trade/timber)

Engineered Lumber Trends, USA, (http://www.rctc.com/irland/)

EPF – European Panel Federation, (http://www.europanels.org/)

EUROSTAT – EU Statistical Office, (http://europa.eu.int/comm/eurostat)

Fédération Nationale du Bois, France, (http://www.fnbois.com)

Forest Products Journal, USA, (http://www.forestprod.org)

Forêts de France

FSC – Forest Stewardship Council, (http://www.fscoax.org)

Hardwood Market Report, USA, (http://www.hmr.com)

Hardwood Review Export, USA, (http://www.hardwoodreview.com)

Holz Journal, Germany, (http://www.zmp.de/holz/holzjournal/indexhj.htm)

Holz Kurier, Austria, (http://www.holtzkurier.at)

Holz-Forschung & Holz-Verweetung, Austria

Holz-Zentralblatt, Germany, (http://www.holz-zentralblatt.com)

Import Export Purchasing News, USA

International Wood Fiber Report, USA, (http://www.pulp-paper.com)

ISO – International Organization for Standardization, (http://www.iso.ch)

ITTO – The International Tropical Timber Organisation, (http://ww.itto.or.jp)

Jaakko Pöyry Consulting, (http://consulting.poyry.com)

Japan Lumber Journal, (http://www.scan-net.ne.jp/~njlj/index.html)

Japan Lumber Reports, (Fax: +81-3-3820 3518)

Japan Wood-Products Information and Research Center – JAWIC, (Fax: +1-206-625-0482)

La Forêt, Switzerland, (http://www.wvs.ch)

Le Bois National, France, (http://www.boiscope.com/)

Le Commerce International du Bois, France, (http://www.ifrance.com/cib-ltb)

L'Echo des Bois, Belgium, (e-mail: echobois@skypro.be)

Maskayu, Malaysia, (e-mail: mtib@po.jating.my)

MEC Naujienos (Centre of Forest Economics Information Bulletin), Lithuania, (http://www.mec.lt)

METLA – Finnish Forest Research Institute, (http://www.metla.fi)

Ministry of Forest, British Columbia, Canada, (http://www.gov.bc.ca/for)

Monthly Statistics of Japan

New Zealand Forest Industries Magazine, (http://www.nzforest.co.nz)

Newsprint Data, Canada, (http://www.cppa.org/)

NUTEK – Swedish National Board for Industrial and Technical Development, (http://www.nutek.se)

Ohio Division of Forestry, USA, (http://www.hcs.ohio-state.edu/ODNR/Forestry.htm)

PaperTree Letter, USA, (Fax: +1-415-278 5375)

PEFC – Pan European Forest Certification, (http://www.pefc.org)

Perkasa, Malaysia, (e-mail: pusaka@po.jaring.my)

PIMA - Papermaker Magazine, USA, (http://www.pima-online.org/magazine/papermaker.html)

Random Lengths Export, USA, (http://www.randomlenghts.com)

Random Lengths Yardstick, USA, (http://www.randomlenghts.com)

Service des forêts et de la faune Canton de Fribourg, Switzerland

Statistische Bundesamt Preise, Reiche 1; Reiche 2, Germany (http://www.statistik-bund.de)

STEM – Swedish National Energy Administration, (http://www.stem.se)

Swiss Federal Statistical Office, Switzerland (http://www.statistik.admin.ch/)

The Forest Products Conservation & Recycling Review by USDA Forest Service, USA, (http://pc9.fpl.fs.fed.us/documnts/nltrlist.htm)

The Swedish Wood Exporters' Association, (http://www.stef.se)

Timber & Wood Products (TTJ), UK, (http://www.worldwidewood.com)

hardwoodmarkets.com, UK, (e-mail: rjwoliver@email.msn.com)

U.S. Census Bureau – United States Department of Commerce (www.census.gov)

USDA Foreign Agricultural Service, USA, (http://ffas.usda.gov)

USDA Forest Service, USA, (http://www.fs.fed.us)

Weekly Hardwood Review, USA, (http://www.hardwoodreview.com)

Wood Based Panels, UK, (http://www.worldwidewood.com)

Wood Markets Monthly, USA, (http://www.woodmarkets.com)

Wood Products Statistical Roundup by AF&PA, USA, (http://www.afandpa.org)

World Wide Wood, (http://www.worldwidewood.com)

World Wood Review, Canada

WWF – Forests for Life, (http://www.panda.org/forests4life)

ZMP – Zentrale Markt- und Preisberichtstelle für Erzeugnisse der Land-, Forst- und Ernährungswirtschaft GmbH, Germany, (http://www.zmp.de)

SPECIAL CHAPTERS IN FORMER *FOREST PRODUCTS ANNUAL MARKET REVIEWS*

Note to readers: We have found that some chapters of the *Review* have a longer life than the *Annual Market Review*. The following is a listing of all the special chapters, including their most important sections, in order to give an idea of their contents. Back issues are available on the Timber Committee website or through the secretariat.

Timber Bulletin – Volume XLVII (1994)

Chapter 3 "Recycling Wood Fibre and its Effects on the Forest and Forest Industries Sector", 7 pages

Situation analysis and legislation
Quantifying the effects
Consequences and solutions

Timber Bulletin – Volume LI (1998)

Chapter 3 "Certified Forest Products Marketplace", 11 pages, (has since become annual chapter)

Forest certification schemes
Why certification?
Status of supply and demand
Constraints to market development

Chapter 4 "Effects of the Asian Crisis on ECE Region Forest Products Markets", 7 pages

Global and specific impacts on the ECE region
Impacts on the radiata pine trade and other forest products
Japan's forest products production and trade
Indonesia's forest products production and trade in 1997 and 1998

Timber Bulletin – Volume LII (1999)

Chapter 3 "Estonia's Forest Products Market", 7 pages

General economic development
Forest resources
Institutional framework
Forest industry
Trade of wood and wood products

Chapter 4 "New Zealand's Forest Products Market", 7 pages

Background to New Zealand's plantation forestry sector
Market conditions
Forestry production and trade 1998/1999

Chapter 5 "Trade Restrictions and the Future", 10 pages

The question of market access
Trends in tariffs and non-tariff measures
Trade impediments
Implications of further trade liberalization

Chapter 6 "Forest Products in the Electronic Market Place", 6 pages

WWW-sites for forest products trade
North American and European electronic commerce
The role of the ECE Trade Division in electronic commerce

Chapter 13 "Tropical Timber Developments", 16 pages, (has since become annual chapter)

Production, exports, imports
Tropical timber consumption and price trends
Strengthening Asian currencies

SOME FACTS ABOUT THE TIMBER COMMITTEE

The Timber Committee is a principal subsidiary body of the ECE (UN Economic Commission for Europe) based in Geneva. It constitutes a forum for cooperation and consultation between member countries on forestry, forest industry and forest product matters. All countries of Europe; the former USSR; United States of America, Canada and Israel are members of the ECE and participate in its work.

The ECE Timber Committee shall, within the context of sustainable development, provide member countries with the information and services needed for policy- and decision-making regarding their forest and forest industry sector ("the sector"), including the trade and use of forest products and, when appropriate, formulate recommendations addressed to member Governments and interested organizations. To this end, it shall:

1. With the active participation of member countries, undertake short-, medium- and long-term analyses of developments in, and having an impact on, the sector, including those offering possibilities for the facilitation of international trade and for enhancing the protection of the environment;
2. In support of these analyses, collect, store and disseminate statistics relating to the sector, and carry out activities to improve their quality and comparability;
3. Provide the framework for cooperation e.g. by organizing seminars, workshops and ad hoc meetings and setting up time-limited ad hoc groups, for the exchange of economic, environmental and technical information between governments and other institutions of member countries that is needed for the development and implementation of policies leading to the sustainable development of the sector and to the protection of the environment in their respective countries;
4. Carry out tasks identified by the UN/ECE or the Timber Committee as being of priority, including the facilitation of subregional cooperation and activities in support of the economies in transition of central and eastern Europe and of the countries of the region that are developing from an economic point of view;
5. It should also keep under review its structure and priorities and cooperate with other international and intergovernmental organizations active in the sector, and in particular with the FAO (Food and Agriculture Organization of the United Nations) and its European Forestry Commission and with the ILO (International Labour Organisation), in order to ensure complementarity and to avoid duplication, thereby optimizing the use of resources.

More information about the Committee's work may be obtained by writing to:

Timber Section
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Fax: + 41 22 917 0041
E-mail: info.timber@unece.org

Website address: http://www.unece.org/trade/timber

UN-ECE/FAO PUBLICATIONS

Timber Bulletin Volume LIII (2000)	ECE/TIM/BULL/53/

1. Forest Products Prices, 1997-1999
2. Forest Products Statistics, 1995-1999 (TIMBER database also available on diskettes)
3. Forest Products Annual Market Review, 1999-2000
4. Forest Fire Statistics
5. Forest Products Trade Flow Data
6. Forest Products Markets in 2000 and Prospects for 2001

Geneva Timber and Forest Study Papers

Forest and forest products country profile: Russian Federation	ECE/TIM/SP/14
(Country profiles also exist on Albania, Armenia, Belarus, Bulgaria, former Czech and Slovak Federal Republic, Estonia, Hungary, Lithuania, Poland, Romania, Republic of Moldova, Slovenia and Ukraine)	
North American timber trends study	ECE/TIM/SP/9
Long-term historical changes in the forest resource	ECE/TIM/SP/10
European timber trends and prospects: into the 21st century (ETTS V)	ECE/TIM/SP/11
Forest and forest industries country fact sheets	ECE/TIM/SP/12
Non-wood goods and services of the forest	ECE/TIM/SP/15
State of European forests and forestry, 1999	ECE/TIM/SP/16
Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand	ECE/TIM/SP/17

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Forest certification update for the ECE Region, summer 2000	ECE/TIM/DP/17

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In an effort to continually improve the UN-ECE/FAO *Timber Bulletin*, "Forest Products Annual Market Review," readers are encouraged to express their opinions on its content, presentation and distribution.

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